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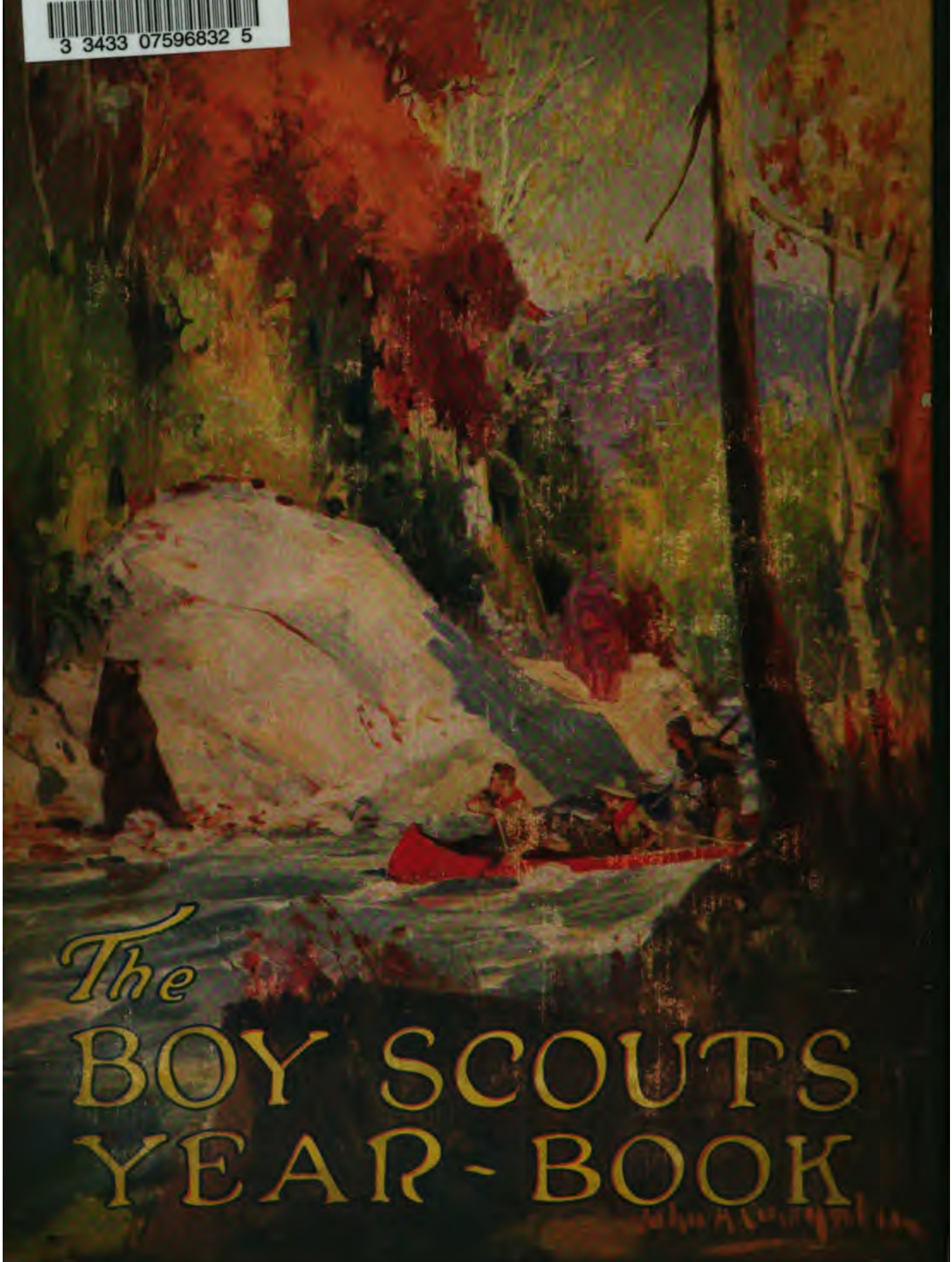
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The BOY SCOUTS YEAR-BOOK

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THIS BELONGS TO

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BE PREPARED

The BOY SCOUTS YEAR BOOK

Edited by
FRANKLIN K. MATHIEWS
Chief Scout Librarian
Boy Scouts of America



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THE BOY SCOUTS OF AMERICA

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THE 8,000,000 BOYS OF SCOUT AGE
IN THE UNITED STATES

WHAT'S IN THIS BOOK

"The Man from Marion"
William Heyliger's sketch of the President, with his message on Scouting.

"A Bird Hike with Dan Beard"
That you can take at any time of the year.

"Christmas in a Lumber Camp"
Arthur F. Rice pictures a deserted lumber camp and then re-creates the Christmas spirit with which it was once filled.

"How Do They Do It?"
Some boys who have accomplished wonderful things in scholarship.

"Model Aëroplanes"
How to make your own.

"The Lure of Crocodile Hunting"
Dr. Hornaday gives a lively account of exciting experiences and narrow escapes.

"Paths in the Snow"
And how to make moccasins—also by Dan Beard.

"The Ballad of Pirates' Gold"
Even scouts who do not like poetry will not stop once they begin this poem by Edmund Leamy.

"Ups and Downs of Cooking"
Belmore Browne, the famous explorer, tells you what to do in camp.

"On Nature's Trail"
Bits of information about unusual animals and birds.

"Pack Rat Paddy"
Dan Beard tells of some of the amusing exploits of the pack rat.

"The Wonder Hunt"
Suggestions for starting a museum of your own.

"The Grizzly Bear at Home"
Charles L. ("Grizzly") Smith tells the life story of one of these animals.

WHAT'S IN THIS BOOK

(CONTINUED)

"What's a Boy Scout?"
A glimpse of the life of the boy who "belongs."

"Outdoor Handicraft"
Interesting things for boys to make.

"The Curiosity Shop"
Odd bits of information.

"Constructing Wireless Apparatus"
E. T. Jones makes some helpful suggestions to the amateur.

"Shorty"
A cowboy episode told by Ross Santee.

"Wireless for Amateurs"
"Spark Gap" gives several lessons on radio training.

"No Arms Helps No Legs"
An incident of Indian warfare on the frontier told by Edwin L. Sabin.

"A Gallant in Ruby and Gold"
Story of a fighting humming bird and his family.

"Pops of Popular Science"
Fascinating facts on new discoveries.

"The Scout Cave"
The Cave Scout advises scouts in his own special vein.

"Think and Grin"
Old Idle Five Minutes opens his pack.

"What Boys Can Make"
Things originated by other boys.

WHAT'S IN OUR STORIES

"You Tell 'Em, Tenderfoot"

A Scout story whose conclusion the author, Brewer Corcoran, leaves to the individual reader.

"Chimney Gold"

J. Allan Dunn tells a Revolutionary tale of two boys, a paymaster's chest and an old oven.

"The Moon God"

The story of a friendship between an Indian and a boy of the *Mayflower*, written by Joseph B. Ames.

"Father Was Right"

The dog who tells this story, as written by Berton Braley, admits it—but he does not follow father's advice.

"The Mad Mullah's Mark"

Captain A. P. Corcoran's young heroes of the Uganda Scout Troop encounter smugglers and make a daring capture.

"Sammyset the Brave"

Johnny Kelly takes part in a pageant—of course, it does not go off "according to schedule"—Wilbur S. Boyer tells the story.

"A Child of Luck"

How luck came to an old prospector and what came of it; an exciting tale of '49 by Edward Leonard.

"Halvers with the Bobcats"

In which James Ravenscroft tells of a boy's thrilling and clever exploit.

WHAT'S IN OUR STORIES

(CONTINUED)

"Brothers of the Wild"

Wild geese in migration and what happened beside a marsh, told by Lee Willenborg.

"When the Bear Beat Bill"

Saskatoon Bill, the old guide, tells how a bear broke into a tenderfoot camp in this story by Ed. L. Carson.

"The Ragged Rabble"

How a Tory boy happened to fight with "the ragged rabble" at Trenton, as related by Edward L. Bacon.

"The Gordon Kid and the Leprechaun"

The Gordon Kid wanted to grow—John R. Neill tells how he arranged to do so.

"A Practical Problem"

Tudor Jenks tells in this adventure story how education most unexpectedly helps.

"The Taking Off of Thundering Billy Blue"

James F. Taylor writes a story of a fierce pirate and his unlucky meeting with Davy Jones.

"Wallie Scores a Bull's-eye"

Frank Farrington tells how Wallie's friends tried to play a joke on him but Wallie, with his new rifle, was a hero in spite of them.

THE COMPLETE CONTENTS

	PAGE
You Tell 'Em, Tenderfoot. (*Story.*) By Brewer Corcoran	17
Pack Rat Paddy. By Dan Beard	24
A City in a Jungle. By May Bosman	28
Back Along the Old Trail. (*Poem.*)	29
The Man from Marion. By William Heyliger	30
Father Was Right. (*Story.*) By Burton Braley	33
Ter Morrer's Plenty Time. (*Poem.*) By Clarence Elmer	43
The Lure of Crocodile Hunting. By Dr. W. J. Hornaday	46
Sammyset the Brave. (*Story.*) By Wilbur S. Boyer	52
No Arms Helps no Legs. By Edwin L. Sabin	59
Paths in the Snow. By Dan Beard	63
Hints on Over-night Hiking	67
Chimney Gold. By J. Allan Dunn	69
The Ballad of Pirates' Gold. (*Poem.*) By Edmund Leamy	85
Making Model Aëroplanes. By Francis A. Collins	87
When the Sparkle's on the Snow. (*Poem.*)	91
The Moon God. (*Story.*) By Joseph B. Ames	93
World's Greatest Stamp Collection. By Kent B. Stiles	101
Christmas in a Lumber Camp. By Arthur F. Rice	102
Cross Country Bike Cruising. By Edwin Tarrisse	108
Wallie Scores a Bull's-eye. (*Story.*) By Frank Farrington	111
On Nature's Trail. By Gene Stone	117
Fireflies. By Dr. Edward F. Bigelow	121
Ups and Downs of Cooking. By Belmore Browne	122
The Spring Call. (*Poem.*) By Bert Leach	127
A Child of Luck. (*Story.*) By Edward Leonard	129
Woodpecker Wireless. (*Poem.*) By A. L. Bolton	135
The Grizzly Bear at Home. By Charles L. Smith	136

THE COMPLETE CONTENTS

(CONTINUED)

	PAGE
Training the Eye to See. By Edwin Tarrisse	142
Outdoor Handicraft. By Dan Beard	143
When the Bear Beat Bill. (*Story.*) By Ed. L. Carson	150
How Do They Do It? By Romeyn P. Benjamin	156
Your Scout Knife	159
Pops of Popular Science. By Francis Arnold	160
Brothers of the Wild. (*Story.*) By Lee Willenborg	166
There's Fun in the Woods. (*Poem.*)	173
The Wild Geese Troop. (*Poem.*)	173
A Gallant in Ruby and Gold. By R. I. Brasher	174
The Gordon Kid and the Leprechaun. (*Story.*) By John R. Neill	180
Wireless for Amateurs. By Spark Gap	188
Shorty. By Ross Santee	190
Constructing Wireless Apparatus. By Edward T. Jones	192
Night. (*Poem.*)	199
The Ragged Rabble. (*Story.*) By E. L. Bacon	201
A Bird Hike with Dan Beard	209
Think and Grin	214
The Curiosity Shop. By Frances Arnold	220
The Taking Off of Thundering Billy Blue. (*Story.*) By J. F. Taylor	223
The Wonder Hunt. By W. B. Ashley	231
The Mad Mullah's Mark. (*Story.*) By Captain A. P. Corcoran	234
Ladybirds Do Their Shares. By Delphia Phillips	238
Halvers with the Bobcats.—By James Ravenscroft	240
What Boys Can Make	245
A Practical Problem. By Tudor Jenks	248
The Scout Cave. By The Cave Scout (F. J. P.)	254
What's a Boy Scout?	256

LIST OF ILLUSTRATIONS

FULL PAGE ILLUSTRATIONS

	PAGE
"On My Honor"	*Frontispiece*
Back along the Old Trail	29
The Man from Marion	30
Wintertime	45
Chimney Gold	83
The Ballad of Pirates' Gold	84
When the Sparkle's on the Snow	91
The Moon God	92
The Spring Call	127
"You've Struck It, Son"	128
The Wild Geese Troop	173
Night	199
"Shoot, Lad, Shoot!"	200
The Mark of the Mad Mullah	239

LIST OF ILLUSTRATIONS IN TEXT

	PAGE
Pack rats sketched from life	**24**
Soda crackers	**25**
Native Americans	27
"It was more a rough house than a real fight"	34
"Kissing both of us"	35
"What I did to his nice clean suit was a caution"	42
"Welcome, Englishmen!"	55
"Owanux wibble giggle!"	56
White men wore no beads	63
Paths in the snow	65
Christmas in a lumber camp	105
His shot took effect	111
Pembroke stepped on a branch that would not hold his weight	112
Bunt and Porky parade up Main Street carrying a wildcat between them	116
Woodpecker wireless	135
Outdoor handicraft	143
Cages for pets	145
Traveling cage	147
Making the with	149
A half-grown bear was nosing his way into the tent	150
That was some kick	151
The bear turned over the table with a million or so dishes"	154
"Beat it! That's mine"	174
"There's a puck of the knob to learn ye manners"	180
Tom saw his foot grow across the room	181
Tom called to a little white and orange fairy	185
The Gordon kid awoke	186
Constructing wireless detectors	195
A bird hike with Dan Beard	209
The little man in admiral's clothes steps out	223
The bobcat was venturing nearer	240
Details for rubber strand winder	244
"Do you see that?"	248
The brook was nearer than they had expected	252
A boy scout in camp	256



FOREWORD

The growing boy and girl are the chief assets of our country. Our natural resources in mineral lands, forests and streams, sources of food, and our large business opportunities, important as they are, must be considered as of secondary importance as compared with the proper development of the citizenship of to-morrow.

The environment in which the boy and girl live, their educational opportunities and their manner of using their leisure time will largely govern their development. Of the 5,000 hours a year that the boy is awake, the school room has but 1,000, and he is without a definite program for a good portion of the remaining 4,000 hours. The Boy Scout Movement serves to supply a definite program for this leisure time of the boy.

Through careful study, it has been discovered that the average boy spends a great deal of his leisure time in reading. For this reason those responsible for promoting the Boy Scout Movement have definitely interested themselves in supplying an attractive and at the same time a wholesome reading program for him. The official *Handbook for Boys* has now reached a distribution of over 200,000 copies a year; *Boys' Life*, the official monthly magazine of the movement, has reached a circulation of 100,000 and it is growing steadily; and in the last few years there has been made available, with the aid of a strong Library Commission, a special edition of books for boys, known as *Every Boy's Library*. Further, the Boy Scout Movement undertakes to list books which are worth while, and is prepared to give advice, when requested, as to books which are not worth while.

Foreword

Opportunity has been presented for the Boy Scout Movement to go a step further in its desire to help in providing beneficial reading matter, by coöperating in the publication of a Boy Scouts Year Book. The first of the series of annual publications of this character was published in 1915. This, the seventh volume, like the former volumes, contains stories, articles and illustrations which are taken largely from *Boys' Life*. Their publication in these volumes will help to preserve in a more enduring form much of the splendid material which eminent men (public officials, educational leaders, naturalists, explorers, handicraft experts, scout leaders, fiction writers, humorists and artists) are providing for current publication in the scouts' official magazine.

To all of these men the thanks of the Boy Scouts of America are extended—and particularly to Mr. Daniel Carter Beard, who serves as associate editor of *Boys' Life*, finding as always the greatest compensation to be that satisfaction which comes from knowledge of greater joys and benefits brought into the lives of boys.

James E. West
Chief Scout Executive





On my honor I will do my best to do my duty to God and my country, and to obey the Scout Law; to help other people at all times; to keep myself physically strong, mentally awake and morally straight.

"You Tell 'Em, Tenderfoot"

By Brewer Corcoran

TUB STAFFORD never had much to say about himself, which was one reason why other people had. "Troop Fifteen oughter get its hooks on that kid," declared Red Collins emphatically, "before Eleven makes him a tenderfoot and us look foolish."

"He's Dog Starr's cousin," mourned Jim Hawley; "no chance!"

"Not if we sit down and weep about it," snapped Red. "What do you think he's goin' to do, come round and ask us to send him an engraved invitation to join Fifteen?"

"Let's go see his father," suggested Biddy Brigham.

Red groaned. "I did that thing last week. Got informed Tub did his own choosing."

"He's a good kid!" declared Jim.

Red rose. "If it wasn't for troop discipline," he stated, "I'd be the first to take a punch at you. What I'm after is help."

"Let's find out what Eleven's doin' to get him, Red," suggested Jack Davis hopefully.

"Not in a thousand years! We stand on our own feet. And they wouldn't tell us anyway," he added. "The Dog's got some scheme to get that kid or he wouldn't be lookin' so blamed innocent. Can't some of you mutts produce an idea?"

"Appoint a committee."

"On ideas? No one's eligible."

"Move the matter be referred to the troop leader with power," cried Jim.

"Seconded."

Red tried to avoid it but failed. He wanted help quite as much as he wanted Tub Stafford in Fifteen. The rest knew it. Therefore they rejoiced, first, because they knew Red was entirely capable; secondly, because, for once, they had tripped him; and, lastly, because each intended to do his full share but preferred that what credit might come should be Red's. It was a way Fifteen had. It was one of the things which made it a crack troop.

Of course it was mere chance that Red and Biddy happened to meet Tub on the way home from school the next afternoon. That they had waited an hour on that particular corner was due entirely to the fact that that particular corner just happened to be in that particular spot at that especial time. "'Lo, Staff!" greeted Biddy. "Seen Dog Starr 'round here?"

"Not since this noon."

"Oh!" The tone contained real disappointment but Bid was sure his heart was crowding his toes out of his shoes.

"What's The Dog got on his mind these days?" queried Red indifferently.

"He was talking Scouting with me."

"That so? Good troop, Eleven," he acknowledged frankly.

"Glad to hear you say that, Collins,"

came the sober answer. "I thought so, too. Mother and father are going to let me join the scouts now I'm old enough an' Doggie sorter hinted they might find room for me in Troop Eleven."

"'Commodatin' cuss!" growled Red, under his breath. "But, Staff," he went on, aloud, "you could join Fifteen, you know. We'll find room for you without one little bit of trouble."

The younger boy's eyes grew round with surprise. For a year he had longed for the day when he would be old enough to be made a tenderfoot and his second dream was to have a chance to join either of these troops. Now to be told he could take his choice made him gulp. "Gee!" he exclaimed. "That's mighty nice in you fellows."

"Not a bit," retorted Red with wonderful indifference. "Always glad to help a chap become a scout. Come round Wednesday evening and we'll make you a tenderfoot of Fifteen." It was too easy!

"I've promised Doggie I'd go to his troop's meeting that night," confessed Tub. "He thought it would be a good thing for me to be introduced to all his crowd."

Red groaned aloud. "Oh, what's the use! See here, Tubby, I'm goin' to blaze a clear trail for you. Dog Starr's crazy to get you to join Eleven; every scout in it wants you. I'm crazy to get you to join Fifteen; every scout in our outfit wants you. There you are."

Tub's face went red, then white. He didn't know what to do, what to say. He knew Collins and knew he never said a thing without meaning it. The only thing he didn't know was himself. And that was why both troops were so anxious to get his name on their roster.

He proceeded to take the whole matter to the source of all good advice—his father. Mr. Stafford looked him over and smiled contentedly. "What would I do in your place?" he repeated. "Oh, I'd probably get a swelled head and spoil my chance for getting into either. I'd probably do a whole lot of other crazy things but I sorter reckon I'd do them on my own, son. You've a husky young pair of feet; they were given you to stand on."

Tub accepted the hint with a solemn nod. The decision was his to make. Dog Starr endeavored to assist him in making it the next afternoon with an hour's cousinly debate. The Dog had met Red and he, too, was now out in the open. It was a matter of troop pride now and, when Eleven's honor was at stake, The Dog was some conversationalist.

"'Course I'm not goin' to knock Fifteen," he acknowledged; "it's a good troop an' everythin'. But Eleven's got two more first class scouts, even if Red Collins is an Eagle. We take a mighty lot of pains with our tenderfeet, Tubby, ole hoss, and we'll have you a Second Class Scout pronto."

"I'm still thinking," confessed Tub. "Red asked me to go on a hike Saturday; I guess I'll do that before I make up my mind."

"But you're coming to our meeting tomorrow night, aren't you?" The question was heavy with anxiety.

"I'd like to."

"Then you'll learn a whole lot of things," he declared with a confidence he was far from feeling. "Don't hurry, ole chap; take all the time you need to make up your mind. The more you think about Eleven, the more you'll be for it. Believe me, it's a great gang! You tell him, Waterbury; you've got the time."

Tub came out of that meeting with the firm conviction that The Dog had been startlingly modest in setting forth the allurements of Eleven. He had never had a better time and, while the fellows had not

gone out of their way to make him feel at home, he had that very sensation, for they had given him opportunity to be just himself.

It took about all his will power not to tell Doggie on the way home that he would join Eleven without further consideration. But he remembered his promise to Red and held his tongue. He could say what he had to say after Saturday's hike. But Friday night came the first snow of the winter and, as Tub looked out of the window the following morning, he sighed a long sigh of relief. Nature had solved his problem for him. The snow would prevent the long tramp in the country and Fifteen wouldn't have to bother with him in the future.

Yet before he was through breakfast he heard a shrill whistle from the direction of the front gate. His father glanced over the top of his paper, his eyes twinkling. "Hear the snowbirds call!" he chuckled. "Seems to take more than an immature blizzard to put a damper on the scouts, son."

"If it's Collins," answered Tub, "he's most probably just comin' round to say the hike's postponed."

"Think so? From what I've heard, I haven't that idea of scouts. They made an engagement with you; they'll keep it."

"So'll I." He jumped up and ran to answer the door bell.

"Good morning, little sunbeam!" grinned Red. "Art ready?"

"Are you really going?"

"Going?" For a second Collins' face was blank. "Why not? You tell 'em, snow; you've got the crust."

"I didn't think you would go," Tub admitted.

"Not really? Why, it's goin' to be more fun than a house afire. Only thought we were going to have a chance to show you how to cook a dinner but this grand young storm's come rompin' along in the nick of time. Eleven's challenged us to lose 'em; I've just heard from The Dog. He's roundin' up his troop right now. Get your raiment on an' I'll tell you all about it on the way down."

Five minutes later Tub was running down the street beside Red. "What do you mean by 'losing' Eleven?"

"Game we invented here," he explained. "We get half an hour's start; then Eleven tries to catch us. Hare an' hounds stuff, sorter."

"But they won't have a bit of trouble catching you with this snow. Fifteen will leave a plain trail."

"Will it?" grinned Red. "You tell him, Fiji, you've got the I's."

"But how can you do it unless you stick to the roads where the tracks won't show at all?"

"Can't follow a road more'n a hundred yards after leaving the take-off. You'll see. The Dog's some hound on a trail too! They got us twice last winter and we lost 'em once. This is where we even it up. There's the crowd," he said, a moment later: "You stick close to me. I've a lot of orders an' things to give an' maybe I won't seem like the polite host."

" 'S all right."

"Sure! 'Lo, there, you Biddy! Where's The Dog?"

"Round the corner in conflab with his bloodhounds."

Red whistled loudly as he rounded the corner. He had no desire to overhear any of Eleven's secret plans. The Dog waved him a welcome. "Which way you goin', Red?"

"East. Take off at Hickson's Corners."

"Fair enough! How's the family timepiece?"

The two compared watches. The Dog's was only an hour and a quarter apart from Red's. They compromised the time.

"Hope mine'll run till we catch you," said The Dog.

"What is the treasure? One of those run-a-year things?"

Doggie grinned. "Getcher!" he chuckled. "We'll have you inside the four hour limit."

"You'll have some hike!" promised Red with equal good nature. "Shall we get started?"

"Go to it! Good luck to you, Reddie."

"I'll need it," he called back. "'Tention, Fifteen! Ready? Hike!"

The thirty members of the troop were off at a dog trot. They had no intention of wasting time on the way to Hickson's. The khaki clad legs pounded in unison as, heads up, the troop whirled out of the city. Now the snow was clean and unmarred. Tub Stafford, at the leader's heels, looked about him with increasing wonder. No such pack could leave the road without making a trail which could be seen half a mile under present conditions.

Hickson's Corners came at last. Beyond it the pines stood black and cold above the white blanket. Only a little further to the east rose the hills, wooded, silent. Tub expected a check but Red turned as he ran. "Scatter!" he commanded. "Gather by patrols in fifteen minutes. Patrols form troop at the Blaine farm in an hour. Fast work now; it's a good four miles cross country."

Before Tub knew what had happened, the troop had disintegrated. Across the fields raced the scouts. There seemed neither order nor method. Had he known the patrol leaders, he would have understood the queer cries which held the little groups within signaling distance. "Come on," cried Red.

The pace was fast now. Tub began to realize in what good condition these fellows were. They cut across the fields at a speed which made him wonder could he last. Into the woods he followed Red. "Yelp! Yelp!" howled that worthy. From the right came answering yelps.

"Wolf Patrol," grunted Red; "keepin' in touch."

They leaped an unfrozen brook, fought through a swamp, turned along its edge and worked eastward. Three sharp yelps were answered as sharply. Red stopped. From either side the Wolf Patrol raced in to rally on its leader.

"Forward, Wolf Patrol!" ordered the leader and set out toward the mountains on as straight a line as he could lay. On all sides was quiet. Tub began to understand what training meant. The scattered patrols were units now. Each was driving for that distant farm.

"You've lost Eleven already, Red," he panted.

"Lost nothin'!" came the disconcerting retort. "Each of 'em will take a single trail and follow it to where the patrols formed. The Dog's no infant."

The younger boy was aghast. "Then why'd you do it?"

"On the chance of some member of Eleven getting lost. They've got to have a complete roll call five minutes after catching us or we win. Save your breath; you'll need it."

Within six minutes he appreciated how good this advice was. His breath was coming in gasps. The Blaine farm must be at world's end. He hoped there would be a check there. Collins caught a glimpse of the red little face. "Patrol walk!" he commanded sharply.

Tub saw Joe Trumball look at him. "I am about in," he confessed frankly.

"Don't blame you," acknowledged Joe instantly. "Some pace!" None would have dreamed, from Joe's voice, he was the fastest chap in the troop. "Is it a good day for a hike? You tell 'em, weather; you've got the wind."

They climbed a rail fence. "Blaine farm begins here," announced Red. "There's Eagle Patrol comin' out of the woods."

The Eagles saw the Wolves at the same moment. With a yell, they started for the distant farmhouse. "Poor work, that," growled Red. "They'll pull their corks before they have to. Steady, Wolves!"

He brought his own patrol in at a swinging trot to find the Eagles already talking with the two patrols which had taken shorter routes. But Collins did not join the crowd leaning against the fence. He was still in the open, watch in hand, eagerly looking for the missing Fox Patrol. The meeting time came and passed without its appearance. Trumball joined him. "Suppose Bid's been caught?" he asked in a low tone.

"Hope not. Fierce if he was. Worst ever."

"There's somebody breaking out of the woods now."

Red saw, too. A moment more and other boys appeared. "It's Bid," Red stated. "See 'em come."

The Foxes were certainly making up lost time. They came across the level fields like snow before the wind. "Got stuck in a swamp," panted Biddy. "The Dog's havin' a good time followin' us, all right, all right!"

"Hope so." But Red was not optimistic. He knew Dog Starr of old. "We've got to beat it," he called. "Ready? Forward!"

They were away as a troop. For nearly their allotted hundred yards they followed the highway, then turned into the fields. "Single file," yelled Red; "footstep stuff."

It looked almost like a single trail as it wound into the woods, but Red did not believe it would deceive Eleven long. Once in the thickets he split the troop into patrols again, ordering them to work eastward. He knew he was keeping too fast a pace to last but the Foxes had lost time which must be won back. Tubby Stafford began to wish his legs were a couple of yards longer and that his feet weighed less than a ton apiece.

Again Red looked at his watch. He should have been a mile beyond where they were. "Foxes and Eagles circle back and change wings," he ordered.

Tubby had just life enough left to be interested in the maneuver. As he trotted along he saw the Foxes, on the left wing, swing northward and disappear while, on the right, the Eagles swung south. "They'll do a fast quarter, swing back, mix up the back trail, cross it and get out on our flanks again," explained Red. "You stand still while I circle the Wolves on themselves."

The snow was badly plowed before the troop was once more in line ahead. Tubby could see no chance of Eleven's ever solving such a problem in trailing. He wondered why Red did not ease up the pace and laugh a bit.

Red knew the troop was almost winded. He also knew his own plan. They won a bare knoll. "Bid," he called, "hide here and watch for Eleven. When you see 'em, join quick."

Biddy nodded. He would need all his breath for the dash he must make. He slipped down behind a boulder on the crest and watched the rest disappear.

Red went on, gradually working northward until he came to a road, then led them across it. A hundred yards and he turned into it again, to follow it for seventy-five, then out. Half a dozen times he repeated the maneuver. They took each crossing more slowly. At a fork he signaled a halt. "What's the matter?" asked Joe.

"Lose 'em here."

"Here comes Bid," yelled an Eagle. "The Dog's making time to-day."

"Hope so." He walked to meet his scout. "They're 'bout half a mile behind," panted Biddy, "and comin' like a house afire."

Red wheeled. "Take the road to the right," he ordered. "Fan out on both sides. When I whistle, rally on me."

They wasted no time on questions. Again they scattered. The whistle brought them together within two minutes. They found Red standing on a bridge above a shallow brook. "Fellows, no noise now."

He slid over the edge into the water. In silence the rest were after him. Fifteen's trails had disappeared.

Tubby Stafford gasped as the icy water seeped through his shoes. "Never mind," comforted Red. "You'll be warm in a few minutes and can dry your feet at the camp fire."

They saw another bridge ahead. Red climbed on to it, then led them back down the other fork of the road in the direction from which they had come. There was a soft chuckle from the troop. Old Red was using strategy now. The Dog would have to look to his laurels.

A second more and Red was flat in the snow. As if bowled by the same ball, the rest of the troop went down. They, too, heard the triumphant yells of Dog Starr and his pack as Eleven followed that tangled trail to the bridge.

Red gave them scarcely a minute. Then he was on his feet. "Fellows," he said quietly, "it's a straightaway now. I'll drop my hat within a quarter of a mile as a sign to Eleven that from there to Hickson's corners is a race. The Dog's hit too fast a pace. We'll run 'em off their feet. Set the pace, Bid. Joe and I will be whippers-in."

They swung out into the main road. Eleven had gone on. Red knew they would lose time at the brook. They would have to scout in both directions. They would have to rally when they found the true trail. He looked at Tubby Stafford. "Tired?" he asked.

"I'll keep up."

"Sure you will!" He dropped his hat in the road. "Haven't done that in any of the other runs," he explained. "It means cutting our time allowance at the finish in half. But we can make it an' it's sportier. Eleven thinks it's pretty speedy; so's Fifteen."

Within a mile Tubby was ready to say it was. Biddy was setting a killing pace. "Gimme your coat, Tub; it'll make it easier for you," said Joe.

The younger boy tried to protest, but big, good-natured Joe would not listen to him.

Another mile and Tubby was running on his nerve alone. Joe looked at Red and shook his head. Tub's face was scarlet. His breath came in sharp gulps, but his jaw was square. Ahead was no sign of Fifteen.

Fifteen minutes more and the youngster came to a stumbling halt. "I'm—I'm sorry," he gulped. "I'm—I'm in. You fellows go on. I'm not a-a scout. If-if they catch me it-it doesn't count."

"They won't catch you," stated Red heartily, "an' we won't leave you, ole top. You haven't had trainin' at this sort of thing, that's all."

"But they'll catch us!" he protested. "We're way behind the troop. I don't want to queer Fifteen, Red."

"You won't. Come on."

They walked a way. The leaders must be at Hickson's already. From behind came a shout. Joe and Red turned at the same instant.

"It's Eleven!" they gulped.

"You Tell' Em, Tenderfoot"

"Go on," begged Tubby. "You can make it. Beat 'em. I don't count. Can't you see that?"

Again the leaders of Fifteen looked at each other. Again there was that same nod. "Can you jog now?" queried Joe gently.

"I'll try."

"Fine."

But it was a slow attempt. From far down the open road The Dog and his troop gave tongue. They had sighted their quarry; they scented victory again. Tubby Stafford heard that cry and stopped short.

"I'm not goin' to queer you," he stated. "You can make it yet. I've told you I don't count."

Biddy Brigham came racing back to see what was detaining his friends. He caught a glimpse of Eleven, of Tub's face. In a flash he knew what was holding them back. His mouth opened, then a grin broke out. "All in, Joe, are you?" he chuckled. "Thought the Foxes would kill you off."

"They did, all right, all right," agreed Joe.

"It's me who's holdin' 'em back," almost wailed Tubby. "It's me who's made Fifteen lose."

The Dog dashed up with a yell of triumph. Eleven surrounded the three patrol leaders of Fifteen with whoops of joy. The taste of victory was sweet. Red Collins held out his hand.

"Thought I'd lost you at that brook, Doggie," he said, with a grin.

"Came mighty near it," he acknowledged frankly. "Good stunt, that, and doubling on your trail at the Y. How'd you happen to run yourselves to death on the straightaway, though?"

"They didn't, Doggie; they waited for me." It was Tub Stafford who blurted it.

"Oh!"

"Joe and I aren't exactly fresh ourselves," announced Collins suddenly.

The Dog nodded comprehension. "Good run," he said quietly. "Where do we build the camp fire?"

"Fifteen's got it goin' by now. Come on and eat with us."

"Sure!" The Dog put an arm over his cousin's shoulder. "Tough luck, Tub!" he said. "You'll speed up as soon as you've had some scout training. Join Eleven an' we'll fix you."

"Would you take me after this?" The little fellow's eyes were big with astonishment.

"Why not? So would Fifteen. You're game; that's what counts with a scout."

"But I was the one who let you catch Fifteen," he protested. "I don't care what Joe an' Red say. They'd have won, if it hadn't been for me."

"Maybe," grinned The Dog. "They're scouts and they play the game."

Tub turned to Red Collins. "Aren't you sore at me?" he blurted.

"Why should we be? Some one had to win."

"But you'd have won, if you'd left me behind," he protested.

"That's not Scouting, ole chap."

"You bet it isn't!" agreed The Dog heartily. "But I'll tell you one thing, old-Tubby-me-boy, you want to learn Scouting from the inside. Red wants you for Fifteen; I want you for Eleven. Which do you join?"

For a moment Tubby Stafford looked from The Dog to Red Collins, then his hand shot out. "I'll join your troop," he said.

Which did he join? You tell 'em, Tenderfoot; you're a scout.

Pack Rat Paddy

By Dan Beard

Illustrated with Sketches by the Author

WHEN you fellows go camping if you will remember that the little white blossom of the wintergreen, or checkerberry, has a right to live; also, that the lovely little vine running over the rotten log covered with blossoms or berries known as the partridge berry, is beautifying that old log, that it was there before Columbus discovered America, and had a prior claim to the wilderness, you will treat all these things with politeness. Why? Oh, just because—because—well, it will help you appreciate and enjoy the outdoors! It will fill your heart with kindness and you will feel at home when you roll yourself in your blanket and lie down on the bosom of your Mother Earth, while Father Sky watches over you with a million twinkling eyes, and your brothers, the trees, whisper an evening hymn or tell you folk-lore stories of the wilderness in a tongue only known to the real Woodcrafter, and as you arise with the sun and see it reflected in each drop of dew on the jewel-bedecked cobwebs strung over the bushes, and note that each leaflet of the blue lupin is set with a diamond, you will understand why I love boys, because boys are *natural* and a part of nature, and you will also understand, and join me in this Indian prayer.

Weave for us, O Great Mystery,
A bright blanket of wisdom,
Make the warp, the color of Father Sky,
Let He-koo-las, the sun-woman,
Lend her bright hair for the weft,
And mingle with it the red and gold threads of evening,
O Great Mystery! O Mother Earth! O Father Sky!
We, your children, love the things you love,
Therefore, let the border of our blanket
Be bending Ku-yet-tah, the rainbow,
And the fringe be glittering Nuk-kah, the plenteous rain!

Thus surrounded by your own family and relatives, so to speak, even though you have no human companion, you will not feel lonesome and when you wake up you will not mar and hack the trees and bushes unnecessarily, and you will leave a clean trail.

Why, under those circumstances, you would not even harm a pack rat!

Of course many of you do not know what is a pack rat. Well, he is a little gnome, or fairy that lives in the woods, in the caves, and may be found following what is known as the Great Divide through Old Mexico up and into British America. Here and every-



Pack Rat Paddy

where we find that this rugged backbone of the American continent is inhabited by these mischief loving gnomes of the tribe of Scirus; just how far north the territory of these hardy little mountaineers extends I am unable to state. I saw them several summers ago as far north as the Yoho Valley near Field on the Canadian Pacific Railroad and they probably live much farther north. The Scirus is an extremely interesting tribe for lovers of animal life, and can and do succeed in making things interesting for all the venturesome folk who penetrate and live in their country, so that they are hated and, whenever opportunity permits, are trapped and killed.



It was in the Cascade Mountains that I first met socially, so to speak, the Scirus Grammurus; of course the mountain men do not know these creatures by such a name; the sturdy trappers and prospectors do not use the dead languages as a medium with which to express their thoughts, they have a very live language of their own, filled with terms unfamiliar to Eastern ears.

In countries where freight is carried in packs on men's backs, to carry, becomes to pack; hence, when horses are later introduced to carry supplies, they are called pack horses and thus we see that an animal which makes a habit of carrying things is called a pack animal and for reasons which will later appear, Scirus Grammurus is known as a "pack rat." One cannot camp for any length of time in these mountains without hearing frequent mention of the pack rats and usually the name is accompanied with language too strenuous to print.

Up to the time of which I am now writing I had not seen one of these notorious little animals, but had begun to suspect the reason for their names, though I could not guess the meaning of the name "Pack Rat Paddy" which was often mentioned in camp, and which always seemed to refer to good luck, seemingly having an opposite meaning to "Pack Rat." On various occasions I had asked my guide "Kaintuck," where this Irishman lived and how he had acquired his strange name, but Kaintuck always put me off until a more propitious time.

Like everything else in the mountains, the propitious time came unexpectedly. We were out after trout and I had been too busy keeping Kaintuck in sight as he "hit the trail" up the mountains to think of asking questions, even if I had the breath to do so.

"You never heared tell on Pack Rat Paddy, what, no? Well, you're a stranger here and no mistake, guess you come from 'York all right, them 'Yorkers don't know nothin' that's west o' the Al-lee-gainney Mountains; don't know no more 'bout this Country an' its doings than the ole Dutchmen of New Amsterdam did couple hundred years ago," said my guide.

We were resting in the broiling sun where an old trail ran across a bit of treacherous slide rock; this is a part of the mountain side where the soil is composed

of loose fragments of rock varying in size from coarse sand to jagged stones as large as dry goods boxes.

Every step on this treacherous ground starts the stones rolling down the steep incline to the imminent danger of life and limb of the traveler. It was not a spot I should have selected as a resting place, but that is because I am a Tenderfoot and "don't know nothin'." My khaki coat, vest and knickerbockers were wet through with perspiration, my ears were throbbing and buzzing as if I had taken twenty grains of quinine caused by my strenuous work in climbing in an altitude over a mile above the granite blocks of Broadway.

"Kaintuck" claimed that nothing less than congestion of the lungs would result from a rest in the cool inviting shade of the cliffs, so I meekly sat upon a blistering hot stone while an unperturbed and garrulous guide unlimbered his tongue to entertain me.

"Them critters you seed humping along the slide rock ain't pack rats, they hain't got no tails worth mentioning, them thar air little chief hares—guess you don't know a pack rat, a tail like a chipmunk and a brain full of meanness (mischief). If you take all the devilment from the brains of a hundred camp robbers (Canadian jays), a thousand magpies, two thousand crows an' bile it down to an essence you will have what's in the brain of a Rocky Mountain pack rat.

"Last winter I wus trappin' on South Fork, a wild country, an' fer six months I hadn't a soul to talk to, not even a dog; snow piles up and up all winter and it's a long way to the nearest outfitters, well, sir, I'll be cornfed if the pack rats didn't steal every blamed kitridge I had 'cept those in my belt. What did they want with them? Well, now what do you suppose they wanted with three good pair of moccasins? They couldn't wear them 'less it was fur overcoats, but they tuk them all the same. They stole my pipe, they stole my fifteen dollars worth of elks' tusks, they stole my jackknife an' they would have taken the cabin if it hadn't been fastened down with frozen snow so that nothin' short of a landslide cud move it. Things got desperit an' it was up against me to leave or make a deal with the rats. Now, when I say they stole, that ain't exactly the truth; they air honest accordin' to their lights, they traded with me but never axed if I wanted to trade.

"At night the racket they kicked up would make you think the shack was full of school boys. You see, it was like this, they have a way of finding a loose clapboard that will sound well, and then stamping on it with their front feet like an old buck rabbit while they are thinking of what next to trade. Fur my moccasins they left me three stale frozen fool hen's eggs; my kitridge box was filled with white pebbles: in place of my sweet cob pipe I found the jaw of a coyote, an' fer my Barlow knife thet I bought at a little jerk-water town in Washington they gave me an ole fashioned copper cent of 1830. Where did they get those things? don't ask me, they always keep a supply of their treasures cached somewhere an' make a trade with the first fellow who comes their way.

"Wull, I had ter drop ever'thing an' go to trailing pack rats; I darsent trap em fur fear of loosin' a chance to find my loot. Five miles over the mountain there is an ole shack belonging to my good friend Henry Stanley. His shack was not in use this year, but the door was unlocked and his things there so's any brother trapper cud hev a shelter ter camp in over night, wull them pesky pack rats had packed all my plunder five miles to Stanley's shack and put 'em neatly away in an ole box he used fer a chair.

Pack Rat Paddy

"O, yes, I fergot about Paddy; wull you see it was this here-a-way; some fellows in Portland had grub-staked me an' I was working a claim thar. Thar was a right smart bunch of prospectors and miners in the mountains, but not much color had been found. Well, among the push was a red-haired Irish boy named 'Paddy.' Don't think he had any other name, leastwise we didn't know it, he was as green as the waters of a glacier lake, and as fresh as the snow on top of Goat Mountains, an' he said nothin' to no one, but worked away at a hole in the cliff he had kinder located in a hit or miss style. Guess his outfit was all that he had, no one had grub-staked Paddy, an' if it warn't for Uncle Tim and sum other ole timers who whacked up with him on grub, the lad wud have starved without complaint. Well, Paddy had a right smart tunnel bored into the mountain, but all he got out of it was stones, still, he seemed to think if he went fur enough into the rock he would find gold in chunks, an' he worked away an' every day grew thinner and thinner; cause, you see Uncle Tim and the other forty miners had sloped for better diggins an' we hadn't discovered that Paddy was short of grub.

"One day Paddy comes staggering down to my shack in the holler an' said that the rats had stole all his crackers and filled his cracker box with stones, then he kluflu-mixed an' I had to fill him up with warm drinks and roll him up in my blankets, or the red-headed cuss would have turned up his frost bitten toes right thar! Why, he was starving ter death, an' how long he had been living on the crackers in that tin box I don't know.

"One day when he was perked up an' feeling good he grinned and said: 'Did yez look at thim stones the rats puts in me cracker box?' an' with that he pulls out a handful of them.

"Say! we almost fell dead at the sight of them, they warn't stones at all, but water worn rounded nuggets of yellar gold! That's why we called him Pack Rat Paddy, an' he an' his pretty wife an' his old mother air living on as fine a fruit ranch as there is in Chelan country to-day. Be yer rested? Well, let's get a move on or we will miss them cut-throat trout."

"Did Paddy find the rat?"

"No, but I did, you bet your hy-u-muck-a-muck! spent a week trailing him, talked of sending to Kaintuck for some blood-hounds, but at last found the rat myself,



in his nest all right—it was in an ole powder can in Paddy's Tunnel. The whole outfit spent months huntin' for the rat's trading post, but none of us ever found enough gold to pay for our tobacco.

"Say, Paddy don't kill rats like the rest on us, you bet."

A City in a Jungle

By May Bosman

UGANDA is a British protectorate in Eastern Equatorial Africa with the jungle on all sides of it—right at the front door and the back door. The wild beasts come out of this jungle and gaze in curiosity and sometimes in rage and fear at the human beings who have disturbed their reign, and particularly at the railroad trains and the motor cars that tear about with so much noise and smoke.

The British have cleared a strip of jungle for miles, and have built iron trails, so that monster engines can belch their way through tropical quiet. All the wild animals disapprove, and their disapproval and their curiosity get them into trouble.

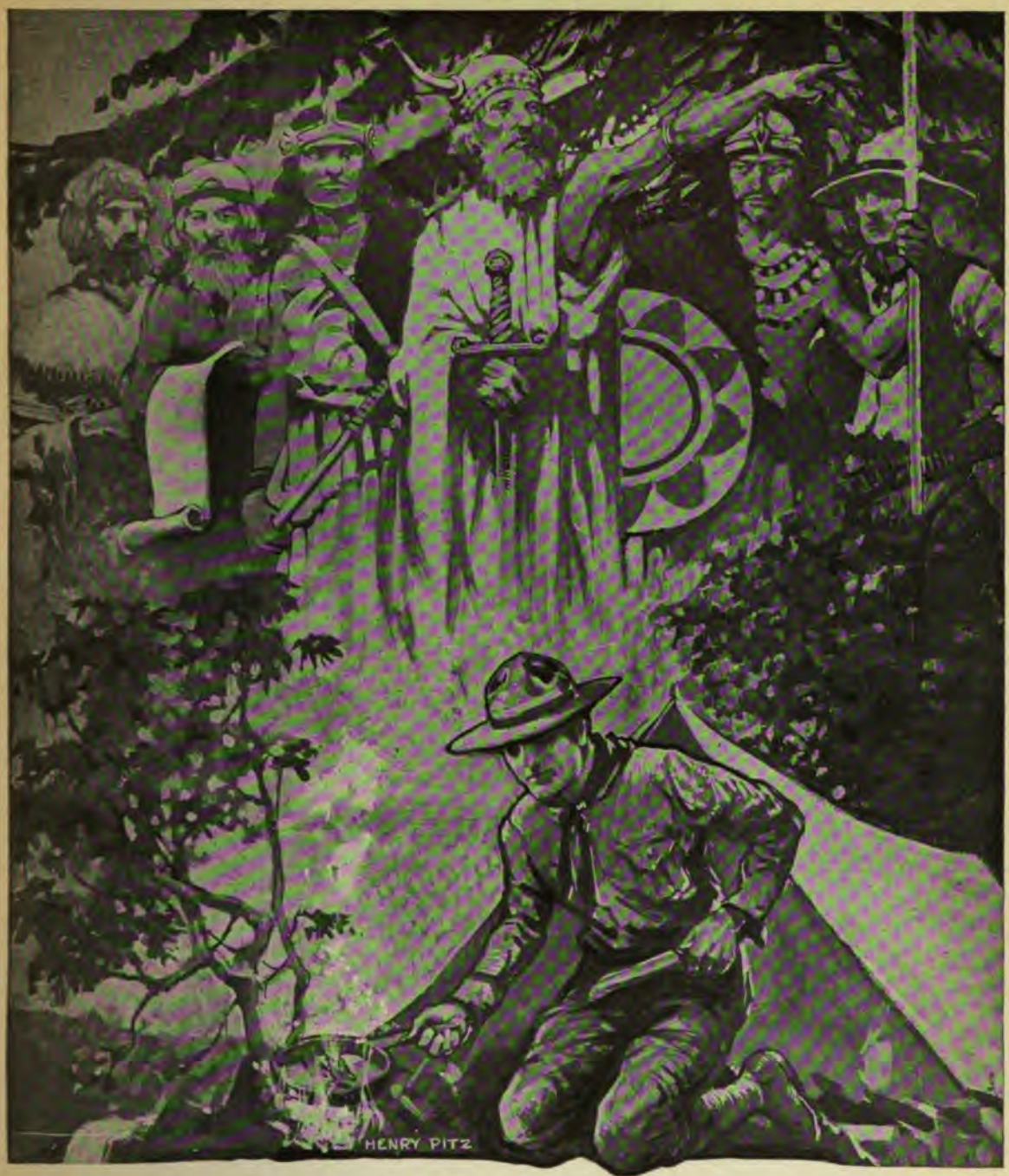
A huge rhinoceros one beastly hot day charged a passenger train, head on, and nearly derailed it, just outside Nairobi, the principal city of Uganda. It is only fair to say that Mr. Rhino damaged the engine almost as much as himself, for his hide and skull are very thick and he's a giant.

On another occasion, a train could not get through because a huge giraffe was standing between the rails, broadside. The engineer saw him in time and stopped, and when the crew and passengers descended from the train they found that the poor beast could not get off the track because his neck was all tangled up with the telegraph wires! He had to be extricated before rail traffic could be resumed, and the telegraph wires had to be cut, at that, to release him.

Nairobi has been filled with motor cars, electric lights, telephones, and all sorts of civilized and modern things, but the huge natural zoölogical garden about it makes it a fearsome and an uncivilized spot to timid people. The wild animals can and do come out of the garden at will, particularly at night, and men have to go armed. Dogs, cats and horses have a rough time of it, and they have to be well barricaded at night if they are not to be carried off before morning by a panther, a lion or a leopard.

And it is nothing, in Nairobi, if you are giving a dinner party, to look up and see the eyes of a panther or a lion shining in at you from the window! These windows are tightly locked and heavily screened, and the wild beasts instinctively know that the men at the other or inner side of the screen have strange weapons that shoot pain and death—their intelligence in this respect is uncanny—so they do not attempt to leap through the screening. They could break through! None of them ever have in Nairobi, but it is terrifying to see one looking in at you and to spy others beyond, in the bright city streets, skulking along. It's like a menagerie broken loose!

One night when the writer was dining in Nairobi, she heard a strange scraping sound at one of the windows. Some guest who had come late and couldn't find the front door, she reasoned. She hurried to the window, prepared to open it, but her shriek brought all the other guests running. There was a young lion at the screen, standing up on his hind feet and shaking the window with his fore paws! He must have been very hungry and innocent of the evil intent of men to wild beasts, for he did not scare easily and it took some minutes to drive him away.



Back Along the Old Trail

Look back over the trail, Scout, the trail of your battling sires,
The trail that mounts from the centuries' depths to the peak of your own desires.
See how it climbs from the dusk of the Past, from the Age of Bronze and Stone.
Through the veil of years, with toil and tears, to the crest where you stand alone.

Look at the wealth they bring you, Scout, the heritage of the years;
The fire of the Norseman rovers, the mind of the Celtic seers,
The strength of the Saxon bowmen, the courage of the grim Tartar.
Men have fought and men have wrought, to make you what you are.

Look that you keep the faith, Scout, true to the hopes they dared,
The visions and dreams they died for, the faiths they held and shared.
Like to your sires of old, Scout, be ye a pioneer too;
Keen-eyed and sure, clear-eyed and pure, that the trail may be cleared anew.

VERSE AND DECORATION BY HENRY PITZ

The Man from Marion

By William Heyliger



"I am with the Scout Movement heart and soul. It is an organization teaching the spirit of service and honor which we must always have in our citizenship. It is a school of our democracy because in it, standing is won only by taking the equal opportunity given all individuals to show their own merit, capacity and work. I wish every boy in our America could have the advantage and the honor of being in the Boy Scout organization and of learning therein that co-operation, justice, the customs of fair play and the gentleness of good manner make for peace and growth as distinguished from the results of disorganization and selfishness and cowardice which lead to contentions and conflict."

"WARREN G. HARDING."

FORTY-ONE years ago a husky boy of fourteen began to work his way through Ohio Central College. His father was a country doctor, overworked as country doctors usually are, underpaid as country doctors always are. There were times when the boy's funds ran out, and then he would leave college and hunt a job. He painted barns; he cut corn; he drove a team of horses for a gang of huskies who were constructing the roadbed of a railroad. His palms knew the callus of hard, grinding labor. The world apparently offered him nothing except what he could grub from it with his own strong and determined hands.

That was forty-one years ago! To-day he stands forth as one of that small group of men that govern the destinies of nations. On March 4, Warren G. Harding, of Marion, Ohio, was inaugurated President of the United States of America. The farm boy of forty years ago has pledged anew to mankind, by his career, the fact that the days of Garfield and Jackson and Lincoln have not passed forever. America is still the land of freedom and of equality, and the land where he who wills can plant his feet upon the ladder of life and climb.

There is nothing heroic about his life.

He had no meteoric career. He is simply a solid American citizen, standing four-square for the straightforward principles that are American. He has won every advancement through honest effort in the job that preceded it. And success has not changed the pattern of his rugged principles. Following his election to the United States Senate, he continued to conduct the affairs of his newspaper, the *Marion Star*, as he had in the days when sometimes there was not enough money in the cash drawer to pay his employees on Saturday night. A friend, coming into the *Star* composing room on a holiday, found him working over a form, his fingers inky and a smudge on his face.

"You're a fine picture of a Senator," the friend twitted.

Mr. Harding smiled. "This is a holiday," he explained. "We want to get to press as soon as we can and let the boys enjoy themselves. So I'm lending a hand."

And after his election to the Presidency, with the worries of selecting a Cabinet harassing his mind, he did not forget to provide funds for the support of a sick and feeble minister in his own town.

The new President of the United States is human, with a human heart under his ribs. There was no such thing as Scouting when he was a boy, but the principle of the good turn has been a part of his creed and a part of his life.

His success has been based on the fact that, like many another man who has reached the summit, he knew what he wanted to do—and did it. While at college, he began to edit the college paper, and there his ambition was born. At odd times, therefore, he worked in a little printing office in the village of Blooming Grove, Ohio, near which he had been born. At the age of 19 he moved with his family to Marion; and there he found the road that led him on to fame.

Marion then was a straggling community of 4000 souls. The *Star* was a struggling daily newspaper, cheaply printed, poorly written, frowsily made up. But young Harding ached to possess it; and at last through his father's help, he bought it for $400. Then began a bitter fight to achieve success. More than once the paper was on the verge of bankruptcy. More than once advertisers were asked to pay in advance so that there would be money on Saturday night for the typesetters and the pressmen. Morning, noon and night, young Harding worked and planned and dreamed.

He had brought the same straightforward, unflinching honesty of thought to the newspaper that he had brought to all else. He did not propose that his newspaper should play the part of scandal monger. He wanted nothing printed that would bring a blush to any cheek. He wanted a newspaper that the child in the home could read and not be tarnished. He wanted both sides of every question. He wanted, in short, a newspaper that would stand for clean thought and clean speech, and that would travel with a clean crowd.

To-day the *Star* is a prosperous newspaper housed in its own building. It still stands for the fine things that it stood for years ago. It has been incorporated, and almost half its stock is owned by men on the payroll. To the world the man who made the *Star* is "President Harding." To the men of the *Star*, he is plain "W. G." They feel that he is one of them. They know all about the heart that beats in his breast. Perhaps that is why in all the years there has never been a strike or even a threat of strike in the *Star* office. Harding has lived the square deal, and his men know it.

When the call for public service came to him, it was the most natural thing in

the world that he should have used the columns of his own newspaper to advance his cause. But that seemed like taking an unfair advantage of his opponent. In that first campaign, when he ran for a seat in the Ohio State Senate, not a word boosting his candidacy appeared in the *Star*. He has never departed from that stand. Even when he was a candidate for the Presidency, his newspaper was not permitted to break out into fulsome praise. It was not the Harding way. He reasoned that his subscribers paid for news, not fanfares for the man who owned the newspaper. So he gave them news, not Harding.

They elected him twice to the Ohio State Senate, and then he was nominated for Lieutenant-Governor. His reputation for squareness, his insistence on the clean things of life, had spread beyond Marion. Ohio elected him by one of the biggest majorities ever given a candidate for State office. And then he was selected to serve his State in the Senate of the United States.

He did nothing spectacular in that body that has numbered among its membership so many spectacular men. He simply plugged along with the rock-bound Harding principles. He was never among the sky-rocketing shouters who caught columns of publicity in the newspapers. His business was the business of helping to frame the government of the United States.

As the years passed, it became noised abroad that Senator Harding was one of those quiet men who "knew." When his party needed a candidate who could go before the public with a spotless record, it came to him.

But there were anxious days when it seemed that he might not be selected by the convention. He went to the *Star* office, to the office of the newspaper that had reflected his ideas of clean speech, and clean thought, and a clean crowd. And there the telegraphic flash of the convention reporters, "Harding nominated," came to him.

On March 4, 1921, he became President, this man who has followed a clean road from his grandfather's Ohio farm to the White House.

THE WHITE HOUSE
WASHINGTON

March 17, 1921.

My dear Mr. Livingstone:

Pursuant to our conversation on Tuesday, in which I indicated informally my acceptance of the honorary Presidency of the Boy Scouts organization, I am now writing to extend the same assurance more formally, and to thank you for the honor.

The Boy Scouts have done a useful work, and the readiness and efficiency with which they did it, particularly during the war period, justifies our earnest hope that their usefulness may be continued and enhanced in the future. I shall be very proud to serve as Honorary President of the organization.

Very truly yours,

Warren G. Harding

Father Was Right!

By Berton Braley

Illustrated by Frank J. Rigney

"THE women folks'll git you if you don't watch out!" My father told me this when I was a mere pup, and I've found by experience that he knew. Believe me, he knew.



He used to say to me even when I was still a little wobbly in the legs and hardly understood what he was talking about.

"Son," he'd say,—he had a brogue, being half Irish and the rest of him most everything—"whin you git out into the wurrld and you'll be lookin' for a home, belike, pick out a man. For a woman will pet you an' coax you an' say, 'nice doggy,' an' all that rot, but if you fall for it, she'll ruin you, she will. She'll coddle you, an' she'll overfeed you, an' she'll make you a soft, flabby, hearth-rug an' easy-chair pet wid a bad digestion an' no ability to fight or take care of yourself at all, at all.

"Now, a man, he's different. He'll respect yer self-respect, an' he'll keep yer fit, an' if yeh pick up a sociable scrap now an' then, an' come home wid an ear shy or a few square inches of skin off yer shoulder, he'll fix yeh up rough but kind, an' he'll ask yeh is the other dog in the hospital or the scavenger's wagon—an' he'll tell his friends what a gritty, upstandin' little divil ye arre. 'Tis the way for a dog to be threated, that, so remimber to choose a man for a master."

As I said, I didn't understand much of that stuff when I was a tiny pup, but my father kept telling me about it until I was big enough to look out for myself, more or less, so I got it pretty thoroughly dinned into me.

I had to start in to make my own way about the world mighty young, I'll say, for neither my mother nor father was gentry, having both escaped from the dog-wagon at an early age and taking up their residence around the docks, where the stevedores used to feed 'em from their lunch boxes and the night-watchman let 'em sleep in a corner of the pier.

The way I happened to beat it from that happy home was this: The dog catcher came snooping around there one noon and he sees father and mother and me—my brother and sister both died when a plank fell on 'em, one day—and he says,

"Whose dogs are those?"

And the stevedores says,

"Oh, they just belong around here."

And the dog catcher says,

"Well, they gotta have a license."

And the stevedores says,

"Where do you get that stuff? On your way."

So the dog-catcher looks over that husky bunch and sees it's no time to argue and he goes about his nefarious business. But my mother's quick ears hears him say, "I'll get those dogs to-night when that gang's gone. They're worth fifty cents apiece to me for catching 'em."

Father Was Right!

So mother, she told father. And they didn't know what to do. And when the watchman come around that night they sort of hung around with him and wouldn't let him out of sight. When the dog catcher came sneaking past the watchman wants to know what he's doing there, and the dog catcher says he's after those unlicensed dogs.

Now the watchman is a poor man, but he says, "How much is a license?" And the dog catcher says, "It's a dollar apiece." Then the watchman, being a law abiding man, says he'll pay it and he shells out two dollars.

"Another dollar for the pup," says the dog man.

"I ain't got it," says the watchman, "but you come around to-morrow and maybe the boys will give it to you. They like the little feller."

No, the dog catcher has to have it right away or he'll take me along. You see, he's afraid the stevedores will chase him off again.

"Then I guess you'll have to take the pup," says the night watchman, "though you're a dirty yellow cur for doing it."

Of course a dog catcher hasn't any soul so he doesn't care what he's called if he gets his blood money, and he makes a grab for me. And mother sets her teeth in his leg and father says to me, "Beat it kid, 'tis sorry I am to turn you out so young but I guess you'll fare all right. I started even earlier. Goodby an' God bless you."

And I took his advice and ran, and the last I see of mother she still had the dog catcher by one leg with father ready if necessary to grab the other.

Of course I'd intended to come back soon and see if matters had changed any, but things began to happen right away, almost, and I never did see my folks again.

I don't know how many times I've heard people say, "The city's no place for a dog!" but it shows how ignorant folks can be. Look at me. I've been in a city all my life except for a few months, and I've got along splendid, on the whole.

If a dog's got nerve and ingenuity and common sense the city's the place for him. In the country you have to go miles sometimes to get anything to eat and the roads in the summer are hot and dry and dusty and a dog goes pretty near mad before he can get a drink.

While in the city there's a dozen full garbage pails every block, and if you nose off the cover or knock 'em over you can feast like a pampered pug. Sure, I'm thin and bony, but it isn't on account of starvation, it's because I like to travel light and keep trained down. I'm a restless sort, you know, having started out wandering very young.

The way I see it, the city's all right for stray dogs. I suppose people mean house-dogs when they say the city's no place for them. I guess it is hard for that sort of mutt, one of those expensive pampered medal



"It was more a rough house than a real fight"

winners. Because if they are let run loose they'll be stolen, and so they always go out on leash and have to mope around the house all the time.

I didn't fare badly even that first night, though I wasn't wise yet how to get into a garbage pail. But I found one with the top off back of a restaurant, and I made a good meal, and toddled on about my business, keeping a wary eye for the dog catcher or anybody that looked like one. About midnight I was thirsty and I remembered one thing my father had told me—about how if I'd stand by a hydrant on the street, by and by the street cleaners would come along to flush the road and then I could get plenty of water and a bath if I felt like it. So I stuck around and pretty soon sure enough the street cleaners turned on the water and I got a good long drink out of the gutter and rolled myself in the stream, too, having learned to be clean, that being something my father said any dog should never forget.

I slept snug in a box in front of a factory somewhere that night, and in the morning I thought I'd go back to the pier and see if things were all serene at home. I breakfasted first from another garbage pail, and started on my way.

I was trotting comfortably along, bothering nobody, when a little kid run out of a doorway and starts across the street. He didn't see me and tripped over me and fell in the gutter. Of course he gave an awful wail, and right then an automobile goes past like a streak, missing the kid's head by six inches. So it seems I'd saved the boy's like by tripping him up, because if he'd kept running he'd of been right under that car, sure. I was for going on, but the kid stepped on my foot and I was nursing it a little, and all of a sudden the kid's mother picks me up and has me in her arms along with the kid, kissing both of us.



"Kissing both of us"

"Nice doggie, sweet doggie. Doggie saved my precious's life. Was him anybody's doggie? Him shall have a nice home, so him shall."

Now can you beat that? Here's my father been warning me all my life to dodge the women, and the first time I set out for myself I fall right into the hands of a Jane and have her begin to spoil me. It's fate, that's what it is. Fate.

Still, I thought maybe I could manage to get away when she set me down. I'll admit it wasn't bad being in her arms, she was nice and clean and soft, and she smelled good—like some of the sweet spices we used to see unloaded from ships.

I know I could have clawed and bit at her and she'd have dropped me soon enough, but my father taught me better manners than that, and my idea was just to be quiet till she let go and then give her a polite wag of my tail and be on my way.

Instead of dropping me, however, she took me in the house with the kid, and she petted me some more and gave me about half a pound of beefsteak, which of course I had to decline, though wagging my tail to show her I appreciated it but had already eaten. I lapped up a little of the water she set out for me, but though I'm by nature courteous I couldn't bring myself to lie on the cushion she put down for me. Cushions are all very well, but they're not for dogs—so I just got over and curled up in the corner to show her I knew my place and wasn't to be shown up as bad mannered just because she had a kind heart.

After a while the kid came in again, and we had quite a visit. He was a man-kid, in spite of his short skirts, and so I got real chummy with him remembering what my father said about being friends with men.

So by and by we romped a little, not that I cared for such childish things as playing with a stick, but the kid expected it of me, and I tried to please him.

Well, I stayed around there for several days, not having any chance to get away, and because of the nice food not too anxious anyhow. Everything was pleasant, except for one or two incidents having to do with a box of sand—my father and mother having neglected to inform me regarding the use of such things. But I learned the idea after the second lesson and everything was delightful after that.

You see how a fellow will forget his old man's good advice the first time he's tempted. Here I was being coddled and spoiled by a woman, already acquiring a roll of fat around my tummy, and actually getting so soft I hated to think of the rough world outside. That's how flabby dog nature is if you don't keep it under strict control.

But following the first week in that house something deep down in my heart made me feel dissatisfied. For one thing I was used to men around and there weren't any in this place. The man-kid was all right, but not big enough. I'd got pretty near my full growth and I was sort of longing for the way the stevedores used to pick me up and throw me around rough. I wanted to pretend to bite a man's foot and have him send me sailing through the air the way they did down at the pier. You see, all my masculine soul wasn't spoiled yet.

At the end of a week or so the woman seemed to think I'd probably stay, but just to be sure she took me out on a little rope. I hopped around and pretended I was having a fine time, but I didn't like that leash. Some dogs are born with a leash on and a collar around their necks, but not me. After about an hour the woman tied me to a box, left the kid inside the little yard, and went in the house. The kid played around a little while and then he went in with his mother. So I gnawed away at the rope and got myself free. I squeezed through the fence and trotted off.

Then I thought, "Gee, that's no way to treat nice people. Maybe they can't afford another dog. I guess I'll go back and hide next door or somewhere and see how they take it when they find I'm gone. If they've simply got to have me I suppose I'll have to stay, though I do hate to sacrifice my career."

I waited around and by and by the mother and kid came out. And the kid let out a yell when he saw I'd beat it. His mother looked around for me, and when she didn't find me she petted the kid and said, "There, there; it was a nice doggie, but probably it's gone to find its own mamma. I'll get you another, a nice fluffy one."

The kid stopped yelling right away and began talking about the new dog she'd

promised him. So that was all right and with a free heart and conscience I trotted off as soon as it was safe.

In the first half mile or so, I fell in with a couple of other dogs about my size, and after some preliminary remarks of various kinds, we had a glorious fight for maybe fifteen minutes. It became apparent by that time that nobody was going to come out ahead, so we gave up the argument just before a policeman—they said he was a policeman and worse than a dog catcher because he shot you if you got noisy—just before a policeman reached us. Of course we were fast friends after that, and forgetting again about going home I trailed along with them. They were wise feists, kind of rough, being older and more experienced than me, but all right underneath.

They put me wise to tipping over garbage pails, and they showed me just how to estimate the speed of an auto or a team so as to waste no energy in getting out of the way. After a day or two with those dogs I could calculate within an inch the course of an auto and its speed. Trolley cars were easier, all I had to do was figure on their speed.

So we wandered around doing one thing and another, cleaning up a number of dogs who fancied themselves as warriors, exploring a few dump heaps in search of bones, dodging stones thrown by small boys and generally living the life of free souls. During the next few days they put me wise to a lot of street lore and showed me some of the finer points of rough and tumble fighting, though I didn't need much instruction, being the son of an Irish dog.

While the life was interesting and exciting enough I felt there was something missing. I couldn't just determine what it was, until one morning we three jumped on a dog who was apparently all by himself. Three to one wasn't fair, of course, if we'd really intended hurting him, but it was more a rough house than a real fight. Right in the middle of it something caught me under the chest and I went sailing away about six feet through the air. It was a man's foot that had struck me—the other dog's master.

Well, sir, the minute I realized what had struck me, I knew what was the matter. I wanted a master. I'd almost forgotten that, but that rough kick made me certain. Not that I enjoyed being kicked so hard, but it reminded me that I wanted to have a good big husky man who knew how to treat a dog, rough but kind, as my father said.

So right there I said "so long" to my two friends and started out to look over the possibilities. I was sorry to leave them, but after all I didn't want to be an absolute vagrant for all my life, like they were.

I wasn't a bad looking dog in spite of my tramp life, so far, and there was a lot of people spoke to me and seemed to want to be friendly. But I shied off, not feeling that they were just what I required.

Along about noon, though, I saw a big husky fellow come out of a factory and start toward a truck that had two horses hitched to it. He saw me, too, and he snapped his fingers and said:

"Hello, Sport. How's tricks?"

I guess it was that "sport" that got me. Everybody else had called me "pup," and while *now* I take that as a compliment, it was too near the truth then to please me. "Sport" seemed to confer a sort of dignity.

Anyhow, I came over to him a little warily, not quite sure but I might get a kick. I'd had to dodge not a few of those. He reached over and picked me up, slapped me hard on the sides, then tossed

me clear across the sidewalk. I could tell he meant it in fun, so I came back with a yelp of delight and worried his toe. He lifted me in the air quite hard, but not to hurt.

I came back and worried his foot again.

"You fine gritty little sport," he said, and I thrilled, remembering how my father had used almost those very words.

"I guess I'll just take you along," he said, and picking me up he climbed on his high seat and drove off.

That began a great life for me. He was all father told me a man would be, rough but kind, proud of me for my scrappiness, and when his work was done and he took me to his boarding house at night, always playing with me—banging me around hardlike, but never any harder than I liked.

During the days, I sat up beside him on the wagon seat or ran along under the truck when I wanted exercise. It was fine times for a dog—plenty of travel, lots of interest, and something new to see and do all the while.

Now and then I'd feel the old restlessness coming over me, the desire to go out by myself, and once or twice I slipped away and went roaming around for a day or so, feeding any place I found scraps and sleeping wherever I happened to be.

He got so he understood that and didn't worry about it.

"I know how it is, Sport," he'd say, when I'd come back looking sort of sheepish and seedy after a bat around town, "'tis for you like it is for a man when he throws up his job now and then and hikes for a new place awhile. But I'm hoping you don't go away from me for good."

And then I'd jump on him and pretend to bite his hand—I had to pretend pretty hard before he'd feel it, for he had a grand tough hand—and wag my tail and tell him I intended to stick around with him and wouldn't go away permanent as long as he wanted to keep me.

He didn't have to teach me anything about looking after that truck, either, when he wasn't around. You see I'd been a stray just long enough to learn to size up people, and the first time a couple of guys that didn't look good to me climbed on the back of the truck one day when my master was inside the warehouse, I had 'em off it mighty quick, I'll tell you. And one of 'em had a bleeding hand and the other was shy part of his trousers and some of the skin off the back of his leg.

My master came out just in time to see them beating it with me barking at them good and plenty, and he sure was pleased. After that, there were other truck thieves came around from time to time, some of 'em offering me meat—but I never took it. As I said before, a street dog gets



wise early. And those two strays I took up with for a while showed me a dead dog in the street one day and told me he'd died from eating stuff a kind gentleman handed him.

Yes, the life with that truckman was certain all hunky dory. But his father hadn't told him what my father told me about women, I guess, or if he had my master forgot just like I did the first time I met one.

And so my master got to going out nights with a woman. She was a nice woman, as far as I could see, and she smelled good, like the one who took care of me when I first started out in life; but days were all right, because he drove his truck and I still sat up on the seat or trotted underneath the axles.

Nights though, I got to roving around a lot—and what made me sore was that sometimes he never noticed that I'd been gone. Women are the limit.

Things got duller and duller. He moved from his boarding house and when we got to the new place he had that woman there all the time. Not that she wasn't all right to me, but she was doing too much of what my father warned me against —petting and feeding and spoiling me and making me fat and lazy. I got so I'd sit on the truck seat all day and never run



after he got to going out with her things weren't the same. Oh, he'd take me along when he went to see her, and she treated me fine, called me "nice doggie," and wanted to feed me candy—I liked it, too —but somehow it was sort of dull sitting around while he talked to her, or going on walks, slow crawls they seemed to me. When he and me used to walk, it was a regular romp and we were pretending to fight all the way, but with her along I just had to plod like a blooming Great Dane.

And half the time he left me home saying I couldn't come to-night because they were going to a show—whatever that is. Ho hum, it got to be a dull life. The under the axles, and I knew perfectly well it was bad for my health and my muscles, but the woman was ruining me.

And then one day my master put up the team and says to me, "Well, Sport, we're through with the old truck. I'm foreman now and we'll both have an office to loaf in."

I didn't exactly understand him until the next morning when we came down to the warehouse. I ran over to the truck and jumped on the seat watching for the horses. But it wasn't my master who brought them out, it was another man. I couldn't stand for that, so I jumped down and went for him, thinking he was stealing my master's horses, but my master

rushed out and yells, "Hey, Sport, come out of that. It's all right, it's his truck now."

Well, sir, that just struck me all in a heap. Why, that truck was about all the fun I had in life, and here was somebody else driving it and my master sticking around the warehouse all day.

I figured that woman had something to do with it, but I didn't hold it against her. My father had told me what women were like—so I knew it was her nature. But I saw where life around the warehouse by day and in that flat by night was going to make me into a regular lah-de-dah kind of dog, and my sleeping pride woke up. I decided I'd beat it as soon as the going was good—though of course I wouldn't leave my master altogether. I'd take a look-see around the world for a month or so and then come home and see how much they'd missed me. I had to do it, you understand, if I was going to save my soul.

But I kept putting it off and putting it off. For one thing, my master now that he had the woman with him all the time didn't need to go out to see her, so we used to have plenty of fun rough-housing. That is, we did until they got a pup. He wasn't much of a pup, in my opinion. He was redder than a chow dog, and as bare as one of these Chewawwaws, and they had to keep him rolled up all the time in a blanket. And the way he whined—he was the loudest whiner I'd ever heard. I used to lie around there, and wish to heavens he'd give a good bark once in a while, but no—all he would do was to whine. I got pretty tired of it, I tell you.

And after they got him, there wasn't much rough-housing for me. Sometimes my master would start to play with me but the woman would say, "Jim—remember the baby"—"Littlejim" she called the pup.

So with one thing and another life got too dull for any use. And I figured to myself my master doesn't need me around the warehouse, and that pup seems to fill their evenings, so now's the time to make a getaway. Of course, I'll come back, but me for the streets and garbage pails. I was fair hungry for a good rancid meal again, anyhow.

So to put it in two wags of my tail, I beat it. And say, do you know, for the first two days it took all my resolution to keep from going back to the flat. Of course, I felt bad over leaving them, even for a vacation, but that wasn't the real trouble. The real trouble was because I'd got so soft and flabby and lazy that being a stray was tough on me. Just as my father had warned me. Why, the second night I was so sore and lame and weak in the knees that I lay down in a doorway and just sort of whined myself to sleep. And I almost got picked up by a policeman in the morning before I could run away.

After I'd skirmished around and found a little breakfast, though, I began to feel better. I'd lost two or three pounds already, and I could begin to see a little of my ribs showing through my skin and I knew I was getting fit.

But I kept away from those tough street dogs until I got hardened a bit. After a week I took a chance with a big mongrel who started to chase me, and when I got through with him he had one less ear—in other words, none at all.

That made me cocky as a fox terrier and I really began to enjoy the rover's life again. I even found pleasure in being wholly masterless, though I had no intention of staying that way. It's all right being a tramp when you feel you have a home to go to, but when you're a tramp that hasn't a home it's something else again.

However, I had a bully time and I never even let a human being get within four

feet of me except children. I used to play with them whenever there weren't any women or men too near. I liked the tough little boys best, they played rough, like a man.

One day I was trotting along a street looking for adventure. The street began to climb and climb and after I reached the top of the hill I looked down at a crack in the street and there was water way, way below me. Another dog I met on that street said that was the river and that I would reach the country if I kept on going. So I kept on going, for I'd never seen what country was like. At first it was just like the city, as far as I could see, houses and streets and garbage pails and autos and trolleys and people—but by and by these familiar sights got fewer and fewer and before long there weren't only a few houses and the roads had grass like you see in the parks, alongside of them, and there was miles of trees.

I may as well say right now I didn't care for the country. I gave it a fair trial. I was wandering around it for days and days. But the garbage pails were few and far between, and though I could occasionally chase things the dogs I met told me were chickens they were silly things and nothing like as interesting as dodging automobiles. As for dog fights—the country dogs may be healthier and huskier, as I've been told they are, but I guess they hadn't had my experience; they really weren't in my class.

Then sometimes I'd go for miles and miles on long hot roads and never find anything to drink. In the city I knew where to find water, there was always a leaky hydrant or something, but in the country it was often hard. If I'd known it well I suppose I wouldn't have had much trouble—but I was used to modern improvements.

Well, I got tired of the country before many days, and I started home. I was in fine shape, thin, full of pep. I could have stood hundreds of days more of roving, but I'd had enough for a time. I figured I'd go home and be spoiled some more. My father had told me how women will ruin a dog—but he didn't tell me how you get so you kind of love them. My gracious, but I was happy at the thought of letting her pet me and feed me up—and of smelling that good smell of her, and then of seeing my master and being rough-housed by him. Why, I was even homesick to hear that pup of theirs whine. There may be dogs that can enjoy a world that hasn't any friends in it but other dogs, but I'm not one of them. I'd learned that.

It was night when I reached the place where my master lived and I fairly ran up the stairs. When I came to his door it was open. I leaped in—but it was all dark and empty. He wasn't there, and she wasn't there, and the pup wasn't there. And all their things were gone, too.

That was awful. For the first time in my life I lay down and put my head between my paws and cried and cried. And maybe I didn't call myself names.

"You poor mutt," I said. "You miserable crab hound. You—you silly pomeranian pest. Here you went chasing off on your own selfish pleasure and deserted them—and look what they did. They went away because you weren't here to look after them. Maybe somebody came in and stole them and all their things while you were gallivanting around. You wanted to be a rover again, didn't you? Well, you're a rover now, for fair. No home, no master, no missus, no pink pup to care for. Oh, you poodle-headed idiot. You're not a dog, you're a—you're a cat!" I couldn't think of anything worse to call myself than that, could you?

I stuck around that place until dawn, thinking maybe I'd pick up their scent

somehow, but they'd been gone too long.

When daylight came I went down to the warehouse, and, say—that was gone, too. There wasn't anything there but a lot of smelly black timbers and things. Another dog told me there'd been a fire.

So that's how I've come to be a stray. It's days and days and days I've been one. My own fault, altogether. At first, I blamed my missus for it, feeling that if she hadn't coddled me and my master I might still be riding that truck, but when I thought it over coolly I knew that wasn't fair. My missus was a woman, and as my father told me, it's a woman's nature to coddle and spoil you. If I didn't want to be coddled and spoiled I could run away, and I had. I'd made my choice, and here I am.

Of course, I've had chances to get other masters but I must be what they call a one-man dog. And if it ain't that man, I'll just be no man's dog. It isn't as tough as you might think, so far as eating and drinking and sleeping goes—a bright dog can always get his living, especially in the city. But I'm carrying around an empty place where my heart should be.

Yip! Yip! Yow! Hey, look who's here! Yip! Yip! Master! Master!

* * *

I hope you'll excuse me for having rushed off that way the other day. But you saw how it was. That was my old master just climbing into that auto. It's his own car, too. If I hadn't run just when I did he'd of got away and I probably never would have found him. Some reunion, I'll say. Why, I thought he'd just bust my ribs. And what I did to his nice clean suit was a caution.

Spoiled?—Nothing but! And I'm going to go right on being ruined as long as I live. I don't want ever to look at a garbage pail again—well, hardly ever.



"What I did to his nice clean suit was a caution"



Ter Morrer's Plenty Time

By Clarence Elmer

Illustrated by Bert N. Salg

"LIS'N' Roberson Crusoe Jones—
Ah's sumpin' ter aks yo' 'bout—
When yo' goner shake yose'f,
An' clean 'at hen-house out?
Does yo' fink all yo' has ter do
Is eat, an' sleep, an' play?
Well, Ah'll havter git er doctor,
Ef yo' 'magin's that a way.
Kase mah min' tells me, 'Missis Jones,
'At li'l boy ob yourn,
Is got er lot ob fings ter do,
Jus' es sho's yo' born.'
Hey! Whd's 'at yo's mumlin'?
'At hen-house slipped yo' min',
But yer reckon, long's it mus' be did,
Termorrer's plenty time!

"H'm! So 'at's what yo's aimin' ter be,
Er 'putter off,' hey, son?
What jus' pos'pons mos' eberything,
An' don' git noffin done.
A membah in good standin'
Ob de 'Han's in yo' pocket club,'
What puts off 'til termorrer,
Eberyfing but eatin' grub.
Laws! You's eben got de pass-word
Wha' dem folkses say—
'Ah kin allus do termorrer,
What Ah orter do terday.'
Well, 'fore yo's er full fledged membah
Ob 'at ar Coterie,
Ah wants yo' ter study de By-Laws,
As 'terpreted by Me.



Ter Morrer's Plenty Time

"We'll 'magin' we's got de book in ah han's,
An' it's open at page one.
Laws! De Preserdent's name is 'Ah Don Car','
An' he neber gits noffin done.
Kase he's got y'ars befo' him,
At leas' 'at's what he says,
An' only sees de termorrers,
'Cause hes life ain got no terdays.
Hes bank ercount is noffin,
Multerplied by naught,
An' de clo's he wears, an' de grub he eats,
Oder folkses bought.
But hes car'lessness, an' shif'lessness,
Ermounts ter quite er lot,
'At's how Mister Ah Don' Car'
Com' ter by de name he's got.

"De Tresherers called ''Ats Good Ernuff,'
An' de Scratcherteries name
Is 'Mister Chuck Er Awful Bluff,'
An' dey all plays de 'put off' game.
Shucks! Dars noffin to be By-Laws
Ob dat er Coterie,
What'll eber bring yo' anywhar,
Ez far ez Ah kin see,
Dey's filled wif stuff 'bout
How ter shirk de tasks yo' has ter do
An' anybody what's got sense,
'Uld shirk at ol' club too,
So we'll jus' burn 'at rule book,
An 'low are tho'ts, ter stray,
To de By-Laws ob er nodder club
What's run er senserble way.

"Dis club is 'titled, 'Git Thar,'
An' de membahs what it's got
Is knowed fruout de worl'
As 'Bruder Johnny on de Spot.'
Dey bank ercount is large ernuff
Ter choke er Elerfunt,
An' dey kin pay fer all dey gits,
Wifout er wimper er grunt.
Kase dey keeps at dey different tasks,
Until dey sees 'em fru,
An' yo' neber hears dem sayin',
'A Shucks! Termorrer'll do!'
Kase—'terday was termorrer, yesterday,'
'At's what dey motto is,
So do what you has got ter do—terday—
Dat's de only *termorrer dey is."*





WINTERTIME

Let mollycoddles squirm and squeal
And stay indoors because it's cold,
For they can never know or feel
The joys that Winter would unfold.
But you, and you, come out! come out!
The world of Winter is all about.

The ice is bearing, let us go
Get out our hockey sticks and play;
To-night it's sure almost to snow,
Let's have the skating while we may.
Be quick, there goes the other team
Along the path beside the stream!

Who cares if coldly blows the wind—
There is the struggle of the game,
There is the fun for us to find,
There is the glory and the fame;
And then back home to where await
The blazing logs within the grate.

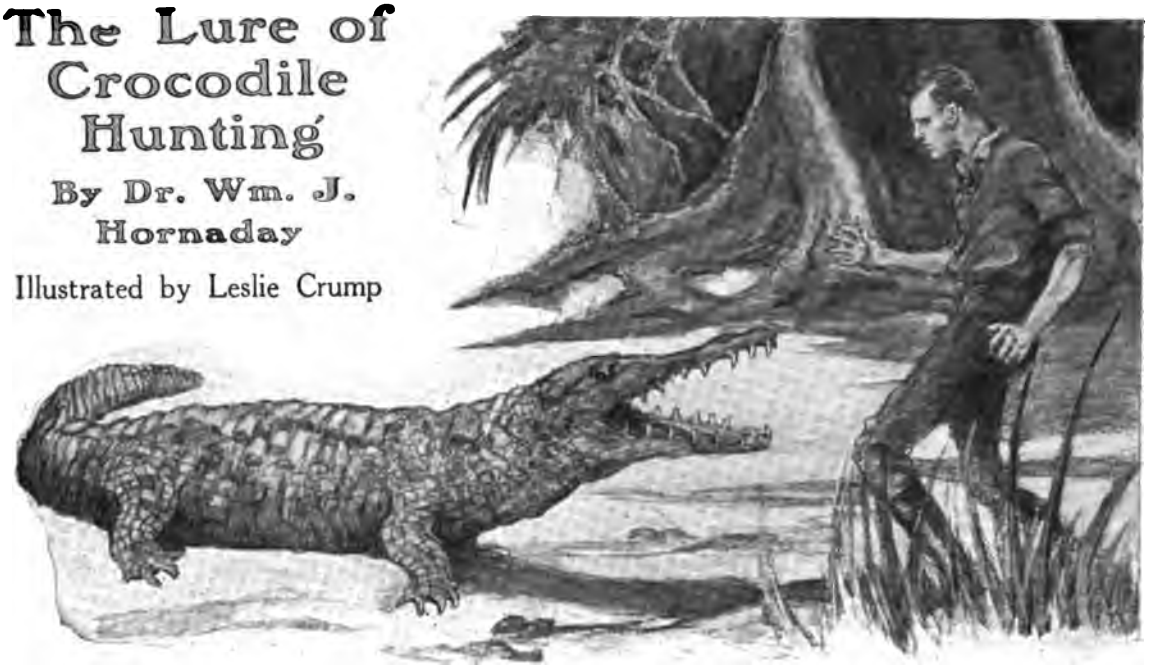
And then a tale beside the fire
Of ghosts and men of long ago
Who found the land of Heart's desire.
Outside there softly falls the snow.
To-morrow there's the hill, the sled,
But now we're tired—let's go to bed!

—*Edmund Leamy.*

The Lure of Crocodile Hunting

By Dr. Wm. J. Hornaday

Illustrated by Leslie Crump



IN the golden days when I was a buoyant and fresh young man, suddenly and unexpectedly to myself, I leaped into the position of Chief Crocodile Killer to the World at large. That was various years ago, and if any other young man has surpassed my list of species, I will, upon proof of his claims, be pleased to hand over to him the above-mentioned title, almost as good as new.

Because they were big, ugly, dangerous and difficult to accomplish in large dimensions; and because of their romantic jungle atmosphere, crocodile hunting always fascinated me. I did all my hunting with "specimens" as the excuse, which was an advantage that few other crocodile hunters have enjoyed. Each well-made skin and skeleton was a candidate for museum honors. There were years when I lay awake nights, and had countless nightmares, in terms of cubic feet of "specimens"; and in those days every 12-foot crock was an achievement worthy of respect.

My education as a crocodile hunter was not achieved. It was thrust upon me, in 1875, when as a beardless and callow youth I determined to set myself up in business as a "collecting naturalist." My first offense was a trip to Cuba, and the Isle of Pines. In the land-locked heart of that balmy isle, at a forest hut called San Pedro, most unexpectedly and thrillingly I saw and shot my first crocodile. It was only six feet long, and its home ranch was a brook only six feet wide, but it was a real flesh and blood crock. It represented *Crocodilus rhombifer,* a species that is quite small for its age.

But mark well the next step in my wild evolution as a hunter and collector of crocodiles.

My guiding star sent me from the Isle of Pines across to Key West, up to Biscayne Bay, to Miami of three houses,

and on up to Arch Creek, which flows from the Everglades into the head of the Bay. Chester Jackson and I camped upon the natural stone bridge that firmly spans Arch Creek, and which, if you look out of the car window, you can see from the train at Arch Creek station, about twelve miles north of the classic city of Miami.

Then and there we heard of a strange-looking but very "big old 'gator" who lived in the deepest part of the Creek, a mile or so below the Arch. In a few hours we got sight of him, out on the bank in a sawgrass wallow. He was a monster for size—a perfect whale of a saurian, gray in color—and by all the powers, *he was a genuine* CROCODILE!

This enormous discovery—of a *true crocodile, in Florida*—nearly bowled me over in a fit. To kill him and take his skin was like attacking a full-grown dragon. Even to-day, as I look at the absurd little 40-caliber single-shot black-powder Maynard rifle that hangs in my office, and think of that 14-foot crocodile, I think to myself. "How on earth did those two young tenderfoot 'tourists' EVER do it?"

The wary old crock would not stand being approached by boat, even by a boat all trimmed up with green boughs to register a harmless elysian bower, or a floating tree-top. Not he! A quarter of a mile away he launched his great hulk, and plunged to depths profound.

The next day we rose before the Old Crock, and I took an advanced outpost position in a bunch of mangrove roots opposite his basking place. Chester kindly took the boat around the first bend below, and waited. Old Crock finally came to the surface; but he smelled a rat, and refused to come out. He just floated and swam on the top of his 14 feet of water, and elected to stand pat.

With the wild impatience of inconsiderate youth I couldn't restrain myself for unknown hours, as according to Hoyle I should have done. Some devilish little imp kept whispering in my ear: "Shoot him in the eye! Shoot him in the EYE!" and against all precedents and sense mechanically I obeyed.

My vicious little bullet put out his optic, knocked a piece out of his bony eyebrow, and went whizzing off over the sawgrass toward Miami.

The big Crock was knocked crazy. First six feet of an enormous tail shot up out of the water, then disappeared to be followed by six feet of dragon head and shoulders. With the boat we wildly followed him up, and landed seven bullets in the back of his neck. Finally we chased him into shallow water, where he grounded, and obligingly died of old age!

With half a foot of his tail gone he measured 14 feet 2 inches, and his bulk was enormous. We hitched our boat to him, and foolishly tried to tow him, by his own floatage; but pshaw! We could as easily have towed a two-ton safe. He was indeed a true crocodile, and the first one ever taken on United States soil. No; we did not spoil the skin, nor lose it overboard. We brought it in under our own steam, and the stuffed giant has reposed on a polished pedestal in the United States National Museum ever since 1876.

Since that lucky episode, in which the Florida Crocodile was definitely put upon the map of the world, "Alligator Joe" and his heirs and assigns have done a roaring trade in lassoing crocodiles alive for the terrorization of Northern tourists, at $50 per thrill. The Palm Beach crocodile-'gator farm has become a permanent institution.

After a lapse of a century of white men in the home of the Florida crocodile, it was discovered that that reptile has the strange habit of digging subterranean bur-

rows in the sandy banks of creeks and rivers, and living in them—a trick that no other crocodilian species of my acquaintance ever thought of.

My lucky strike in Florida immediately precipitated other troubles with crocodiles in other lands. The next important mix-up occurred in Venezuela, on the Orinoco, in the dry season, close below Ciudad Bolivar. By good rights I should have been swallowed alive, or carried into the stream and drowned; and would have been but for the kind Providence that watches over the destinies of fools and drunken men.

Again Chester E. Jackson and I were hunting together, and having ambushed a very ugly and vicious sharp-nosed crocodile 12 feet long, we fired together. Our bullets landed only two inches apart. The old Crock lay still on the sand and sprung his jaws wide apart, thereby registering a mortal hit.

Foolishly leaving my rifle lying where I fired it, I sprinted at top speed across a hundred yards of clean sand, to grab the crock by the tail before he could drag himself into the water and get lost.

As I stooped and seized the end of his tail, a mighty sweep of that member threw me aside, and in just two ticks of the clock that awful brute whirled as if on a pivot, presented his long snout and four long rows of teeth within a handbreath of my face. He opened his jaws about three feet wide (so it seemed to me) and gave a guttural snarl of rage that scared me horribly.

Chester yelled, "Look OUT!" and ran forward.

Like a frightened goat I sprang to the tail end of the horrid reptile, and again he whirled and faced me. Then he snapped his jaws together with a loud "clank," so near me I could have touched him; and such awful eyes I never saw before, or since.

By the time we had executed that semicircle for a third time, Chester rushed up with his loaded rifle, put a shot into my enemy's neck, and finished his career.

Now, just why that reptile did not take to the water and plunge out of sight, as he was due to do, I do not know; and just why he did not make one good lunge forward for me, and grab me in his jaws, I do not know. Perhaps it was because he knew that the Museum of Comparative Zoölogy needed his skin, and would immortalize him; but even if that were true he had no right to scare me to death, as he did.

The Orinoco Crocodile (*Crocodilus intermedius*) has a very narrow head, and as heads run he approaches the panhandled Indian Gavial, our next source of trouble.

Just one year after that circus with the Orinoco crocodile, we were up against the Gavial of Northern India, in the River Jumna, the largest tributary of the Ganges. (And what a thrill it sends through my 1921 blood to write that sentence!) My whole "reputation" as a budding zoölogist rested on my skill, or lack of skill, as a rifleman and hunter. If I could not kill gavials across the Jumna, "science" was not my portion!

But that absurd little Maynard rifle saved my reputation. I lived in a flatboat, with six Hindoo rivermen to pull it, or row it, and converted it into a zoölogical houseboat. And oh, man! what a lark that was! The glamor of its romance will not fade out by a single ray until I do.

Now, those gavials made me a world of trouble. Conditions for shooting them *and getting them* were frightfully hard. I had to develop a line of strategy that would have done credit to a general in uniform. All the big ones had to be killed by stationing men on their side, in ambush, and then shooting them at long range across the river. Let him who thinks it

easy to bag a 12-foot gavial across a deep river at 200 or 250 yards, good measure, with such a rifle and ammunition as I used in those benighted black-powder days, just try it once! I crawled over hot sand on my stomach until I began to develop abdominal scales, and ribs like a crocodile. I thought about trajectory, and windage, and light halation, until it hurt my head.

Fortunately for me, I knew enough of the rudiments of crocodilian anatomy to realize that under the handicaps that covered my humble efforts, there was only one shot that instantly would so react that my quarry could be secured. That was to hit the vertebral column in the neck, in front of the armored and protected body. At 250 yards the neural plates on the top of the neck did not bother me. It was like shooting to hit a man's naked forearm, or get nothing; and at 200 yards the mark was nothing but a dim, gray horizontal line. If we hit, the reptile's jaws would fly wide open, quite as if you had struck a spring lid-opener, and the gavial would lie still. Then a hat waved to the watching men would send them scampering over the sand to seize the gavial by the tail, and keep it from getting into the water. If the reptile was not killed by the first bullet, there would be activities later on, involving a struggle for supremacy, pending the slow arrival of the sahib with the gun.

Our greatest adventure ought not be described, because only hits are history and misses (usually) are mystery.

It concerned a gavial so big and so heavy that my light ordnance was utterly unable to conquer it. It was like attacking a superdreadnaught with an eight-inch gun.

It is a fact that the male Indian gavial sometimes attains a length over all of 20 feet and 6 inches. I have seen a museum specimen of that size. In the theater of my brazen operations there was one old he-gavial so huge that he made 12-foot specimens seem small. Naturally, I yearned for him, and planned his downfall. In my mind's eye I saw him shot, skinned, mounted and displayed in the "Agassiz Museum" with a large label reading: "COLLECTED BY——."

That was a whale of a gavial. He had on his snout the hall mark of great size and age—a big round boss of bone as large as a big apple. Only the giants have that.

The gavial that we sought frequented no land save a tiny sandy islet in the middle of the River. When he slowly and ponderously hauled himself out thereon, he looked for size like the Great Dragon of Saint John's vision. The odds were against us, but we thought that by sharp work we might win through.

To reach him at the crucial moment, my Hindoo boatmen would have to swim to him! In the beginning of our work on the Jumna, those men were afraid to seize any wounded gavial by the tail; but I educated them, and taught them to be good sports. I solemnly pledged myself to pay to the family of any one of them who might be badly injured, or lose his life in our operations, as large an indemnity as 150 rupees. With that insurance those once-timid fellows actually became brave, to the verge of recklessness.

When "The Day" came, and old Pfafner came out to meet his doom, five of my men were posted in a sand-pit, at the river's edge. With outrageous care and precision —and secret anxiety about my rifle's power —I fired for the neck vertebrae. The huge head flew open and the crocodile lay still.

"Forward! Go to him! Twenty rupees if you get him!"

The crouching men sprang from their lair, plunged headforemost into the river, dived as far as they could and swam for

the islet. I fired again, to make my work more sure—and then the monster began slowly to move. Another shot—and he moved right on.

"Faster, men! He is getting away!"

The swimmers frantically surged forward, hand over hand, and the water boiled around them. Would they land in time?

A fourth shot went forward—just as the huge mass of moving crocodile reached the edge of the water.

"Hurry, men! Hurry!"

Some of them actually whined in their eagerness, just like dogs in leash.

But we lost.

With a margin of strength sufficient for his purpose, our intended prize slowly slid into the water, floated for one terrible ten seconds of despair and hope, then disappeared forever. The men landed where he had been, thirty fatal seconds too late. We never saw him again, and we never again saw another like him. In that twenty-mile section of the Jumna, he was in a class by himself.

Oh, yes! If I had had smokeless powder, and a cartridge six inches long, he would have waited for the men.

On the whole, that was the greatest failure, and the greatest uncompensated disappointment, of all my hunting experiences on four continents.

Contrary to the general terrorization of the world, very few species of crocodiles —which includes all the alligator and cayman species—are aggressively dangerous to man. The Mississippi alligator has not, so far as I am aware, any more than some very exceptional cases of man-eating authenticated against him. So far as I know the South American crocodiles are not real "man-eaters," and neither is the mugger or the gavial of India. The aggressively dangerous species are the Salt-Water Crocodile of the Malay Archipelago and the Broad-Headed Crocodile of Angola, West Africa, and elsewhere in Africa. Of course there are other species, harmless when fish and wild animals are abundant, that under stress of great hunger and desperation, will attack anything made of flesh and blood; but these exceptions are outside the general reckoning.

The Salt-Water Crocodile of the Malay Peninsula, Borneo and other islands of the Malay Archipelago, is a voracious man-eater, and a bold and aggressive hunter of men. Its favorite method of hunting consists in haunting the bathing places of native villages, and seizing victims while they are bathing in the murky water, or dipping up water to carry away. Under such disadvantages it is an easy matter for a crocodile to drag a man into deep water, drown him quickly and afterward devour him at leisure. In my Bornean days the Sarawuk Government paid a reward on crocodiles of fifty cents per foot, and in 1878 it paid for the killing of 266 head.

Once in my life I went fishing for crocodiles. It was on the west coast of the Malay Peninsula, at the little Malay village of Jerom. Opposite the mouth of the small river that there emptied into the sea, we often saw big salt-water crocodiles (*Crocodilus porosus*) swimming on the surface of the sea, two miles or more from the shore.

The method employed was wholly of Malay origin, and with some slight assistance from a friendly Chinese fisherman, it was put through by the Malays who were my backers while I was in their midst.

They made an "alir," or crocodile hook out of a piece of tough wood an inch thick, sharpened at both ends, and tied in the middle at the end of a forty-foot rope of soft but tough green bark. The bait (a small skate) was firmly tied under the hook, and then one end of the hook was

bent up beside the rope, and loosely tied there with a feeble string. The working hypothesis of that alir was that it was easy to swallow, but when the bark line was pulled vigorously the wooden anchor would turn crosswise in the crocodilian interior and hold fast.

To the farther end of the line a dry cocoanut in the bush was attached, as a float; and then the bait was cast upon the waters.

The next day we found the float agitated and a living something at the other end of the line. When we hauled in, the ugliest old mossback crocodile that I ever saw came to the surface to have a look. He snapped at the bark rope, but the soft stuff merely went between his teeth without being severed.

When we started to tow the old fossil down stream to the village, he began to fight; but presently he accepted the inevitable and came along rather comfortably until we neared the landing place and essayed to pull him ashore. Then he snapped desperately at the rope, rolled over and over, dove to the bottom, and stood on his head and on his tail by turns, until he was actually out upon the bank.

Then a rifle shot quickly and painlessly ended his muddy career.

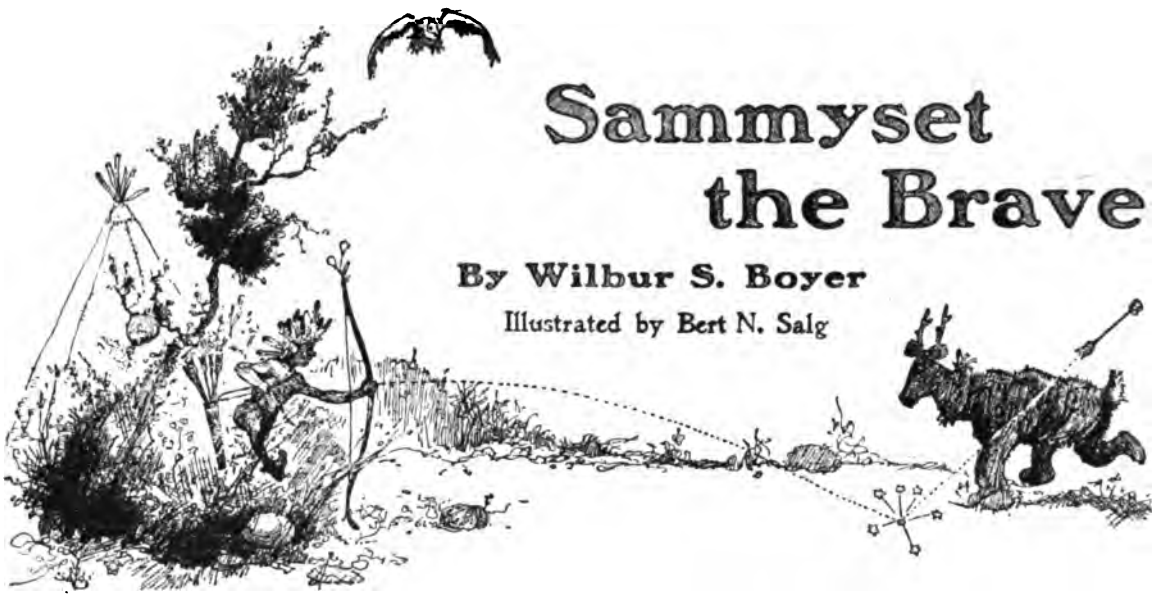
He was precisely 12 feet in length, he weighed 415 pounds on the hoof, and his skin was so rough, so sodden with mud, so ugly and so impossible that I declined to accept it from him, and took only his skeleton. But that Creek yielded nine other crocodiles of his kind that were more acceptable, and all of them were converted into "Specimens."

In muddy tropical rivers and creeks, where there are no banks for hauling out, the alir and bark rope are much more effective than the rifle.

In Florida where alligators once were common and cheap, the alligator leather industry has left of our once great stock of American alligators, practically nothing but fragments. Now the 'gator-leather hunter has come down to the humble basis of going at night with a jack-light and "shining" the eyes of baby 'gators, and committing a series of infanticides.

The largest wild alligator that I ever saw, alive or dead, was sixteen feet and one inch long. It was taken in Louisiana, and shown by the museum of Tulane University at the Cotton Centennial Exposition in New Orleans.

The very last word on this scaly subject is that we have just received, from a Belgian man of science and economics, a questionnaire for the benefit of a plan that is being considered for the raising of crocodiles in the Belgian Congo for their skins, for commercial purposes; which is a long shot, with brush in the way.



Sammyset the Brave

By Wilbur S. Boyer

Illustrated by Bert N. Salg

THE *Mayflower's* boats drew into Silver Bay on Lake George and Carver, Brewster, Alden, and the rest of the Pilgrims landed on Plymouth Rock right in the midst of a Y.M.C.A. conference. There to greet the first settlers was an audience of Y men and Y girls, Boy Scouts, neighbors, summer visitors along Lake George from Sabbath Day Point to Ticonderoga, and one lone Indian—redheaded Johnnie Kelly. A thousand, more or less, white men and women of 1920 seated in a semicircle on the grassy slope of a great amphitheater to applaud the forefathers of 1620 as those brave seekers for freedom first planted foot on American soil. A thousand, more or less white. How commas alter the sense and tell a new tale! For among that crowd were those of other races than the Caucasian, some of the finest of their clan, here gathered at the Y's great school on the most unselfish of missions: seeking to make themselves more useful to their fellow men.

But among all that fifty score, strange to say, there was not one representative of the full-blooded American Indian. It was this circumstance that led to the drafting of Miss Spreggs's chore boy, Johnnie Kelly from Amsterdam Avenue, New York City, there being no young man at the conference bold enough to appear in the scanty attire of the aborigine.

The stage manager of the pageant to celebrate the three hundredth anniversary of the landing of the Pilgrims was Miles Standish. In everyday life Miles Standish was plain Murgatroyd Jones, a dry-goods merchant of Brooklyn. He was an earnest little roly-poly, so wrapt up in the work of the stupendous spectacle he was staging that in his busy cranium there was no room for what little sense of humor he may naturally have possessed.

"Ain't I sure to be pulled in for trotting out in me Museum of Art clothes?" asked Johnnie, to the half-concealed merriment of his chum, Jack Van Zarn.

"Oh, you'll wear a pair of bathing

trunks," explained the serious Miles Standish, "and we'll give you a coat of paint."

"I ain't worryin' about a coat," said Johnnie. "How about pants?" And Jack Van Zarn exploded.

"Well-er-yes," admitted Standish; "painted, of course."

"What's the dope?"

"I don't understand."

"What have I gotter do?"

"Here's the story," explained Miles Standish. "The Pilgrims landed in December. One day in March Samoset, an Indian who had learned a little English of the Englishmen at Penobscot, entered the town and surprised the settlers by calling out, 'Welcome, Englishmen!' He was an envoy of Massasoit, Sachem of the tribe possessing the land north of Narragansett bay. You are to be Samoset. I intend to make free with history a bit in order to idealize the situation—make it impressive — heart-stirring — give a dramatic thrill. When the Pilgrims land on the rock, Samoset will appear with open arms to greet them. Motion pictures are to be taken, and if that tableau doesn't make a hit, I am a poor judge of the dramatic art."

Johnnie did not enthuse. His face indicated keen disappointment.

"There ain't much actin' for me in that," he grumbled. "I git all cammyflagged up with paint like a chorus girl and I'll have to take a real bath with soap to git it off, and for what? Jist to throw me wings out like a stuck up rooster and crow, 'Welcome, Englishmen!' "

"He's right," broke in the assistant stage manager, the Rev. Mr. John Barker, a young minister with fine lines of good nature radiating from the corners of his twinkling eyes. "We can stage a scene of the redman in his native haunts just before the Pilgrims land—a grassy slope —the brave stalking his provender with primitive implements of the chase."

"Ah, none o' that barefoot dancin' on the lawn for me!" protested Johnnie. "What the crowd'll fall for is a Indian chasin' his Sunday dinner and shootin' his meal ticket into its slats."

"Yes, exactly," agreed the minister. "You describe a 1620 episode in 1920 New Yorkese, but it is a splendid idea."

Miles Standish, though a bit dubious of the Rev. Mr. Barker's histrionic abilities, finally gave a reluctant consent, and Johnnie's spirits rose to the heights.

When, however, the possibilities of Johnnie's part sank into Jack Van Zarn's mind, he could not suppress himself.

"Whoever heard of a red-headed Indian?" he demanded soulfully.

"Leave it to Miles and the dominie," retorted Johnnie with a familiarity that amused the minister and shocked the dry-goods merchant. "When you're lookin' for a redman, you want 'im red; and that's me. You kin be the hind legs of a deer for me to shoot at. Let Bill Spreggs be the forequarters, and I'll promise to shoot his end."

"Another good idea!" cried Barker enthusiastically.

"Ah, he'll spoil it all," grumbled Van Zarn. "An Indian has always got to have a solemn face, and Johnnie will see something funny right in the midst of it."

"He mustn't do that," declared Miles Standish with some trepidation. "This has got to be a serious affair."

"I'll jist t'ink all the time about goin' back to school after vacation and then I sure won't grin."

"But if he steps on nettles or runs against a blackberry bush he'll be sure to let out an 'Ouch!' " persisted Jack.

Johnnie pulled up his trousers leg and jabbed a pin up to the head in his thigh.

"Kin I stand pain?" he demanded. "If

you kin do that, Jack, I'll let you be Indian, and I'll be a deer's tail-end."

The stumped Jack failed to qualify, and Johnnie wisely refrained from explaining that when he had cut his leg by falling into the cistern, the nerves had been severed so that there was no feeling in that particular spot.

Thus it came about that on the great day, before the *Mayflower's* boats rounded Plymouth Beach, alias Slim Point, Silver Bay, there stepped into the natural amphitheater in front of the most appreciative audience that a boy could wish for, an Indian most primeval. Like the apparel of Gunga Din, there was not much to Samoset's costume, before or behind—just a pair of trunks. But raspberry and blackberry juice, the green essence of a peck of spinach, and a rare collection of variegated mud daubs had disguised the chore boy thoroughly. With a headdress of fresh-water clam shells and chicken feathers his fiery red hair was entirely extinguished, and he strutted forth, a quiver of arrows over his shoulder and a long bow in his hand, with all the self-assurance of a matinee idol.

He was met by the Rev. Mr. Barker and amid polite applause solemnly escorted to a planked platform about as big as a packing box situated at a convenient point within the semi-circle of the attentive gathering. On the platform was a five-pound mallet with a three-foot handle.

Dr. Barker raised his hand for silence. The Indian stood with arms folded across his gaudy breast, scowling fiercely straight ahead.

"Ladies and gentlemen," said the assistant stage manager with impressive dignity, "let me present to you one of the leading actors in to-day's drama, Neverflinch, chief of the Wampanoags, lineal descendant of Samoset himself, who will act the part of his illustrious ancestor. You have heard of the stoicism of the redman. Will someone provide me with some ordinary pins? Ah, thank you, I press these three pins up to the very head in Neverflinch's leg."

A shocked murmur ran over the impressed crowd.

"Not a muscle does he move."

The performance provoked a round of applause. Any who had doubts of Neverflinch's genuineness must surely have been convinced.

"Neverflinch wishes to deliver a message to you," continued Dr. Barker. "He will talk in the Indian tongue and afterwards I shall translate this speech." He turned to Samoset. "Pow-wow" said he.

The redman turned his head slowly and surveyed the expectant throng with a supercilious sneer.

"Ugh pugh giggle umph!" said he in a harsh guttural and screwed up his face as if he had got a whiff of ailanthus blossoms. "Plub slum wang doodle."

"He says he is happy to be with us to-day," explained the obliging interpreter.

"Ugh wibble zing vah wally hoo."

"He will recite to you the prowess and endurance of his race."

"Gump wishy-washy pish rush piffle wow!" said the brave Samoset with a fiendish exhibition of teeth. And for the next three minutes he poured out a steady stream of the strangest gibberish that ever came from mortal tongue. His body began to sway in a jumpy, shivery motion. Over he stooped, head drawn in like a scared turtle's, and commenced a slow Indian dance around the box. His voice gradually grew louder, his antics became more and more energetic, until at length he was leaping and windmilling around the little platform, howling like a catamount. Seizing the long-handled mallet in both hands, he whirled it around his head.

"Hi yi bang how wow hoo chow!" he bawled.

With a blood-curdling yell he leaped into the air and with all his strength brought the mallet down on the planks of the platform with a resounding crash.

"Owanux gum mum!"

Again the mallet swung to the accompaniment of an ear-splitting howl and came down with a bang that split a plank.

"Owanux giggle umph!"

A third inhuman assault smashed in one side of the box.

"Owanux wibble giggle!"

Then the Indian leaped upon the remnants of the platform, folded his arms and scowled straight ahead.

Dr. Barker with impressive solemnity stepped forward to explain.

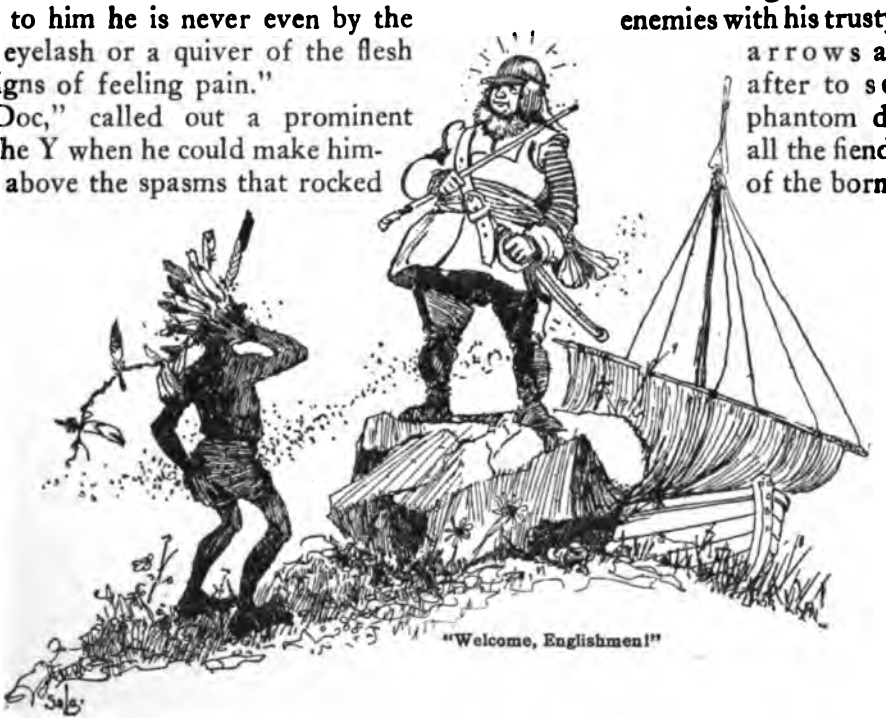
"Neverflinch says the redman has been schooled to conceal his emotions. At his father's knee before the council fire he learned ever to be calm, silent and gentle, and above all no matter what torture is meted out to him he is never even by the bat of an eyelash or a quiver of the flesh to show signs of feeling pain."

"But, Doc," called out a prominent leader of the Y when he could make himself heard above the spasms that rocked the audience. "At the end he made the same remark three times, accompanying it with what appeared to be appropriate gestures. You haven't translated that."

"Quite true, professor," responded the unabashed Dr. Barker, "it's a bit difficult to put it into words, but you can interpret its significance for yourself when I explain that it is his complimentary close in which he expresses his deep regard and affection for all here assembled."

The audience gave evidence that they thoroughly enjoyed the exhibition; but it can readily be surmised that Miles Standish, had he been present instead of out in the harbor, would have had disturbing misgivings as to the effect of such a scene upon his solemn historical spectacle.

The craving to be the center of admiring interest, so natural in every real boy, had now full opportunity for realization. Samoset showed off to his heart's content, gliding swiftly over the lawn or crawling on his stomach to bring down imaginary enemies with his trusty bow and arrows and thereafter to scalp the phantom dead with all the fiendish gusto of the born savage.



"Welcome, Englishmen!"

When sufficient time had been allowed for Johnnie's vanity to be partially satisfied, on came the deer. A remarkable animal, that deer, with the head and antlers of a noble buck and its hide made of some variety of cloth from the Brooklyn emporium of Miles Standish. The creature ambled across the landscape with all the grace of a jogging cow. Natural History was badly sprained because the hind legs persisted in performing various antics to call attention to the fact that they were worthy of notice. While the head would stretch up pretending to nibble leaves from an apple tree, the hindquarters were likely to be dancing a jig, and again, owing to a lack of coördination between forequarters and hind there was an occational extension and contraction of its trunk that exhibited remarkable elasticity of the vertebrae. Yet despite these inequalities, the deer lumbered over the green, passing conveniently near the ambushed Samoset. The savage let fly an arrow, taking care, according to instructions, not to shoot too hard, though the arrows were tipped with rubber. The shaft struck the turf ten feet from the passing quadruped, which stopped to see what was the trouble, then circled about to pass the appointed spot of slaughter once more. This time the arrow went over its back. The deer laughed outright, the hindquarters dancing a derisive jig; and the crowd applauded heartily.



"Owanux wibble giggle!"

This was too humiliating to Samoset's descendant. He leaped from his hiding-place and chased after the wambling deer until he was close beside it, then drawing the arrow back to its head, he let it go. The shaft bounced against the passing animal precisely where Bill Spregg's anatomy ended.

According to the book and lyrics, Bill should have signaled the hind legs that it was time to keel over and die. But Bill's feelings were hurt. The deer let out an agonizing "Ouch!" and the forequarters leaped three feet into the air.

"You're kilt," whispered Johnnie.

Feeling that it had been double crossed, the front of the deer had no intention of dying without revenging itself upon the savage who had failed to kill painlessly as per programme. The deer lowered its head and charged the gaudy redman. Those sharp prongs were not inviting. Samoset backed away expostulating in

guarded undertones. His retrogressive movement brought him to a clump of bushes, into which he tumbled heels over head.

The deer's forelegs tried to stop short, but the hind legs were not aware of the intention. The animal buckled up like an accordion, then rolled into the bushes on top of the Indian.

The next instant deer and redman scrambled out with cries of surprise, dismay, and pain. They had stirred up a yellow-jackets' nest and the little hornets were living up to their reputation. The deer was in a deplorable state. In getting up the front legs had rolled over to the right, the hind legs to the left. The animal's middle had a twist in it that looked serious for its digestive tract. Furthermore, the buck had lost its head—literally and figuratively, for Bill had dropped the stick that held the antlers, and his own head now protruded through the hole in the neck. There were convulsions inside the animal's skin until Jack managed to tear a hole in the back large enough to permit the egress of his own tow-headed crest. Without parley front and hindquarters raced side by side for the lake, trying the while with only partial success to free themselves from their hide.

The boats from the *Mayflower* had by this time drawn up to the historic Plymouth Rock! and the dignified Pilgrims, too engrossed in their own parts to take cognizance of the stirring climax of the deer hunt, were grouping themselves according to Ogden's painting, "THE LANDING OF THE PILGRIMS." The five figures of the foreground had just formed on the edge of the bank, which behind them took a sudden drop of two feet to shallow water. There were Mrs. Brewster, Priscilla Mullins, Governor Carver, and the dumpy, all-important Miles Standish in a German helmet minus the spike and plus earlaps cut from a tomato can, boots with flaring tops like the hoppers of a coffee-mill, and Dr. Barker's trunk-strap draped across his rotund front to support a 1918 sword-bayonet. Behind these, John Alden had just managed to secure a toehold on the green for his own pose. And on one side was a camera-man grinding away that the scene might be re-enacted from Maine to Calcutta, from North Cape to Buenos Ayres.

The six figures at the boat and the three to complete the left of the picture were getting into position when there charged upon the scene the two halves of Samoset's deer, traveling ten feet apart but unfortunately joined with a tough piece of hide that refused to sever. The forelegs decided to pass to the right of the central group; the hindlegs chose the left. Had the feet of the forefathers and mothers been firmly planted upon the new soil, had they not instinctively drawn back, throwing themselves off their balance, the momentum of the charging animal might not have made such an effective sweep. One instant, Mrs. Brewster, the dainty Priscilla, sedate Carver and modest John Alden stood before their descendants in self-conscious dignity, the next their modest heels went into the air and they vanished spluttering in the shallow water, Mrs. Brewster bowling over John Alden and Priscilla clinging tight to Governor Carver.

The center of the picture was smeared out, for the brave Captain Standish had hopped aside in time and scrambled upon historic Plymouth Rock itself, where with superb presence of mind he assumed his proper pose, right foot forward, left hand on sword hilt, right across his chest, with cane poised for a backhand swipe at the daisies on the lawn before him.

Samoset had paused to beat about wildly at the tormenting hornets and was thus

several paces behind his quarry. He knew there was deep water beside Plymouth Rock. Even with yellow jackets to disturb him, it would not be like Johnnie to pass up an opportunity to express himself.

"Welcome, Englishman!" he bawled at the top of his lungs as he sprang beside the astonished Miles Standish. "You're welcome to everythin'—but ME FOR THE OTHER SIDE!"

And he dived into Mrs. Hemans' breaking waves on the stern and rock-bound coast.

For an instant noble Standish maintained his pose, then he showed signs of distress. Slap went his hand against his face, he gave his thigh a convulsive thwack, tried to reach several spots on his anatomy at once, and commenced a lively imitation of Samoset's speech, gestures and all. His helmet went clinking upon the rock. Turning his back to the camera, he leaped into the air, his short fat legs doubled under him as far as his paunch would permit, and he dived into the welcome bay like an old grandfather bullfrog.

And the camera-man, with keen judgment, took three more turns, picked up his machine and walked off at a lively gait, his face suffused with a beatific smile.



No Arms Helps No Legs

By Edwin L. Sabin

IN the fall of the year 1779 (which was a bad Indian year along the Ohio River border) Major John Rodgers of the American Ranger service was taking seventy-five men in several flatboats from Louisville, Kentucky, to Fort Pitt of Pennsylvania—the location of present Pittsburg. Near evening, when they were approaching the mouth of the Licking River, Kentucky, opposite Cincinnati of to-day, they sighted a few figures standing upon a sandbar in the Ohio.

"Injuns!"

Yes, and there was a canoe paddled by three other Indians, making out from the Kentucky shore, to get the figures.

The opportunity seemed too good to be passed.

"In for shore, boys," the major ordered; and signaled to the boats behind.

They had been hugging the shore, to avoid the current as they crept around the bends. Now they pulled hard on the sweeps, for the Kentucky side. It was not far.

"We'll march to the rear of those fellows," Major Rodgers said, "and be ready with a surprise for them when they land. There may be more, waiting; but not above fifteen or twenty, I fancy, and we'll bag them all."

They left five men as a boat guard; seventy marched on a short circle to surround the landing spot. The laden canoe was upon its way back; it acted as though all unsuspicious.

The seventy took positions; deploying, they advanced cautiously, with rifles cocked, through the brush and timber—stealing ever closer, their eyes fixed before them, their muscles tensed, prepared to rush — when a tremendous chorus of whoops pealed high and from front, rear and both flanks a hail of bullets pelted.

Three hundred Indians — Shawnees, Wyandots, Hurons and Mingo Iroquois —had been crouching silently, while the canoe had tolled the Rangers into their midst. In a twinkle Major Rodgers and forty-five of his men were done for, and the Indians were charging with tomahawk and knife. The twenty-five survivors ran pellmell across the bend for the refuge of the boats. But all the boats except the farthest had been seized, and the five men of the guard had desperately pushed out in the other boat into mid-stream. The shore swarmed with the reds. There was no show here.

"Back to the timber! Break through!" That was the cry. Fighting their best, the remaining Rangers did break through, the most of them, amid the trees and the gathering dusk, and by twos and threes finally straggled into the settlers' fort of Harrodsburg, interior Kentucky.

Among those who did not get there, was Captain Robert Benham. He had been shot through both hips, and was down and out—could scarcely move. Luckily for him he had fallen near a large up-rooted tree with a thick, bushy top. Gritting his teeth to keep from groaning, he dragged himself deep into the covert of boughs.

Until late at night the Indians, yelling

and calling, searched the timber with their scalping-knives; they did not find him. Here he stayed, shivering with cold and burning with thirst and fever. It was a long night. The forest grew quiet. Had the Indians gone? No! Well it was that he made no change, for in the morning they returned and began again to look for scalps and plunder.

Captain Benham was so miserable that once he thought of surrendering. Then he decided to stick it out. A man with no legs would be of little value as a prisoner, and could expect only the hatchet.

He lay hidden all that day. After pillaging the boats, the Indians went away at last, in a body, to celebrate at their central town. Captain Benham might safely crawl out, and so he did.

Now what to do? He could not stand, even, much less walk. In the twilight he saw a raccoon descending a tree nearby. He shot the coon—but he was too stiff and weak to get at it, to cook it and eat it. Then he heard a voice not more than fifty yards distant in the forest.

That startled him. He wished that he had not shot. Indians were about, and his rifle crack had betrayed him. Very well; he would sell his life dearly—he was half dead, anyway. He reloaded with all speed, and sat tight, waiting, his eyes roving from tree to tree.

Pretty soon he heard the voice again. He did not reply; he only cocked his rifle, and poised it, ready to fire, for the voice was nearer in the gloom.

The voice sounded a third time, now more plainly. It queried him.

"Hello! Who shot? Answer me, whoever you are, red or white."

That was good English, but there were Indians who spoke English, and there were renegade whites to do the same.

"Hello, hello!" the voice repeated; and broke into angry swearing.

That was not only English, but round Kentucky borderland tongue. Captain Benham's heart leaped gladly.

"Here! This way. I'm a white man," he hailed. "This way, this way!"

Somebody came stumbling and groaning into the dimness.

"This way."

"Hello! Who are you, there on the ground?"

"I'm Captain Benham. Who are you?"

"I'm Taylor. What's the matter? Can't you get up?"

"No. I'm shot through both hips. But what ails you? Anything?"

"A trifle, cap'n. I'm shot through both arms."

And with his two arms helplessly dangling, Ranger Taylor arrived.

So here they were, the sole men alive upon the forest battlefield. One could not use his legs, the other could not use his arms. Either would have likely starved, if alone; but together——!

"We're not gone coons yet, by a jugful!" Captain Benham, the quick-witted and the indomitable declared. "Listen. You lend me your legs, Taylor, and I'll lend you my arms. The two of us make one whole man, and unless I miss my guess we'll pull through if the Injuns let us be. I've got meat lying yonder at the foot of that tree, but can't reach it. Now you kick it toward me, while I'm building a fire. Then I'll skin it and cook it and feed you."

That worked nicely.

"I'm perishing for a drink," said Ranger Taylor. "I can get it by wading out deep enough to suck like a cow. But how about you?"

Captain Benham considered.

"I'll tell you. Here's my hat. Stick it between your teeth—take a good grip on the brim. Then dip it and play dog by fetching it back to me."

That worked also. They drank. Captain Benham tore off his shirt and Ranger Taylor's shirt, and bathed and bound the wounds of both.

They spent several weeks in this one spot. Captain Benham sat and shot everything within range—coons, squirrels, birds, His other half, Taylor, kicked the game in to him with his feet. Captain Benham fed Taylor and himself, and dressed wounds.

After a time all the animals near at hand had been killed or frightened away. No Arms traveled wider, herding the wild turkeys, and driving them toward No Legs, who sat ready with his rifle; and getting the turkeys in line, sometimes killed two and three at a shot.

At last he was able to hobble by aid of two sticks. Taylor could use one arm a little. They moved to the mouth of the Licking, and fashioned a bough hut, for November had come and the nights were frosty.

They could go no farther. Indians were likely to discover them any moment, winter threatened to starve them, and they anxiously waited for boats bound up or down the Ohio.

November 27 they saw a boat. It was a flatboat, traveling down stream, and well out into the current.

With his two good arms Captain Benham hastily hoisted his hat upon his crutch stick, and he and Ranger Taylor shouted loudly. Alas! Instead of putting in for them, the flatboat manned every sweep and veered for the opposite side.

They had been mistaken for Indians, or else for decoys placed by the Indians—a favorite trick. And it really was little wonder that they were suspected, for they were almost naked, their hair and beards were long and uncombed. They certainly did not look like civilized white men.

That was a terrible disappointment. So late in the season no other boats might be along for days and days—perhaps not until spring. They had been abandoned to the Indians and the winter storms. The flatboat scurried on. Captain Benham sank back exhausted; Taylor raved bitterly.

See! Suddenly they stared in hope again. About half a mile down stream the boat had stopped, to launch a canoe from its stern, with three or four men in it. The canoe skittishly neared, reconnoitering. The flatboat crew evidently had been of two minds, and wished to make certain.

No Arms and No Legs ran and hobbled to show themselves more fully at the water's edge; they waved and capered and shouted. The canoe halted, out from shore, afraid to draw closer.

"Who are you?"

"I'm Benham—Captain Benham, of Rodgers' command. This is Taylor. For heavens' sake take us aboard."

"Benham and Taylor, you say? That's a tall story. But you don't come it over us! Not much! If you're Benham and Taylor, what you doing there?"

"We're wounded. We've been here ever since the battle."

"A likely yarn. Benham and Taylor are dead—and long dead, too."

"No, no! I was shot through both hips, Taylor was shot through both arms. We've been spelling each other, and managed to live. You can see for yourselves. If you're white men, don't desert us."

The canoe slowly edged in, its crew alert, with rifles cocked and eyes and ears intent for ambuscade. The least suspicious movement, the least suspicious sound would have sent them away in haste.

The nose of the canoe barely touched the bank——

"In with you! Quick!" Then——

"It's Benham! I know him, boys. All safe. Hold her steady till we help 'em aboard."

And the deed was done. They had been rescued.

The flatboat took them full-speed to Louisville. There they created a great sensation, for they had been given up as dead. In due time they both got entirely well, and Captain Benham served in other Indian campaigns.

After the treaty of peace between the Ohio Indians and the United States, in 1795, he bought the very land, near the mouth of the Licking River, across from Cincinnati, where he and Ranger Taylor had so bravely defied death; and here he spent the rest of his days.

"Our Country"

By F. J. P.

Our country, generous Fatherland,
Within whose far-extended boundaries
Our native gifts of talent, our hopes, our inspirations,
Have full play, to thee we owe a debt of gratitude
So great that we can ne'er repay. For stately forests,
Fertile plains, rugged mountains, sky-blue lakes
And rushing streams; for priceless hours
Spent in thy great, friendly out of doors
Receiving with thy citizens of fur and wing thy
Bounteous gifts of nature and thy pure, free air;
For close communion at the dusk of day
With kindred spirits round the glowing coals
Of dying fires, with heaven's fathomless void
Above us and the Great Truth of the ages
Stirring deep within our souls; for our rich
Heritage of inspiration from the lives of thy
Great sons who loved and served thee
With a passion pure, for Washington of noble
Character and dauntless soul, for Lincoln
Who, in his compassionate heart, bore all the
Anguish of thy people, scourged with civil war;
For the patient, brilliant intellects of Fulton,
Morse, McCormick, Edison and Field, who set
Themselves with singleness of purpose to achieve
Mastery of problems of great import and through
Such mastery to add new richness to the lives of
Men; for all the opportunities which thou so
Freely givest us to share the privilege of learning,
To train our minds to think and hands to do;
For this great fact, that he who fails has none
Beside himself to blame, for thy great State is
So arranged that high and low and rich and poor
Have equal opportunities to reach positions yielding
Power, and strength of character and praise of men
For worthy deeds, developing their talents with no
Limit or restriction save only merit; for food
And clothing, shelter, home and friends; for the invaluable
Boon of work, with that rich satisfaction
Which can only come from doing each his part
In all the varied tasks that each day brings;
All these and countless other blessings from thy
Boundless store, we humbly do acknowledge, thanking thee!
But let our thanks be more than empty words,
For blessings such as these deserve rich recompense.
Let us express our gratitude in worthy, useful lives,
Remembering that they who richest live most freely serve
Their fellow men. And he who lives with service
To mankind his guiding star, should know that he
Is also serving thee, our Fatherland.



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Paths in the Snow

By Dan Beard

With Diagrams by The Author

TO those of us grown-ups who are honest and own up to being more or less sentimental there are few things more interesting than tracks in the snow. To thread the tortuous course of a set of tracks, taking due care not once to leave the trail, is among those simple natural and spontaneous delights often looked upon as such a matter of course that we fail to recognize the fact that our zest and pleasure in tracking results from the hunting instinct that has come down to us from the childhood of the human race.

Even the beaten paths in the snow possess a joy all of their own which, to our mind, excels that of the so-called enchantment of the open road, which had been sung by many writers long before Stevenson wrote of it with "such compelling charm." To a barefooted boy swinging on the front gate of the white picket fence, the road is both a challenge and an invitation as he gazes wistfully down the dusty reaches and long perspectives where the fences on each side seem to converge until they meet in the unexplored distance or where the road climbs up the hills and dips into the swails to lose itself at last in the mysterious shade of overhanging branches of the wood or grove. That vagabond joy in the open road, that yearning to fare forth and solve the mystery of

what lies beyond, comes with almost irresistible force to all of us.

But the mystery of the open highway road pales into insignificance when confronted with the wonder and the enchantment of a new world created overnight! A fairy world of crystal white with a sparkling cover which conceals all the rough edges of the fields, rounds off all the sharp angles of the banks, and everywhere smooths out the irregularities of the earth's surface. Think of the joy of donning boots and leggins or moccasins, fastening on skis or snowshoes and making paths in the snow where no foot of man or beast before has left a track, to be the very first to step into the land of enchantment! Even we grown-ups still feel a hint of these vivid pleasures which have drifted down to us from glorious boyhood.

It is difficult to tell whether the lure of the trackless snow or the white expanse dotted with hieroglyphics, made by the feet of bird and beast, is most attractive. One feels the delight of an explorer in a land of virgin snow, but one also feels the intoxication of the primal hunter at the sight of game, when one follows the tracks in the snow made by the wild creatures of the woods and fields.

A road or even a trail, be it ever so rough and casual, must be bound by certain limitations in order that it may properly call itself a road or trail. It cannot go where it pleases, it must wind its way around obstructions, it must follow the natural grades or valleys. But the tracks in the snow, on the contrary, are delightfully irresponsible; they go under the fallen logs, or leap over them, sometimes running on top of one to its full extent, or they will recklessly cross the traveled road at right angles, go over a stone wall or up a hill or down; apparently they are incorrigible and governed by no rules or purpose, they either have no destination or they have their own idea of where they are going, and their own manner of getting there; they fascinate both man and boy, for each of us is curious to know to what unexpected adventure the tracks may lead.

But to follow these tracks we need some sort of footgear which will keep out the powdered dry snow and not absorb the water when the snow is damp. During my own boyhood days shoes were only for girls and women; all boys as well as men wore boots and every morning I used to have a tumultuous time pulling on those refractory and stubborn boots. With the fingers thrust through the straps on each side of the leg I would pull and grunt while hopping around the room kicking my toe against the baseboard of the wall in an effort to drive the stubborn toe of the boot back on to my foot or my foot forward into the toe of the cowhide boot. All that effort was necessary because the boot had become hard and stiff from the soaking it had had the day before, for be it known that if there was any moisture around the day before our boots *were always soaked.*

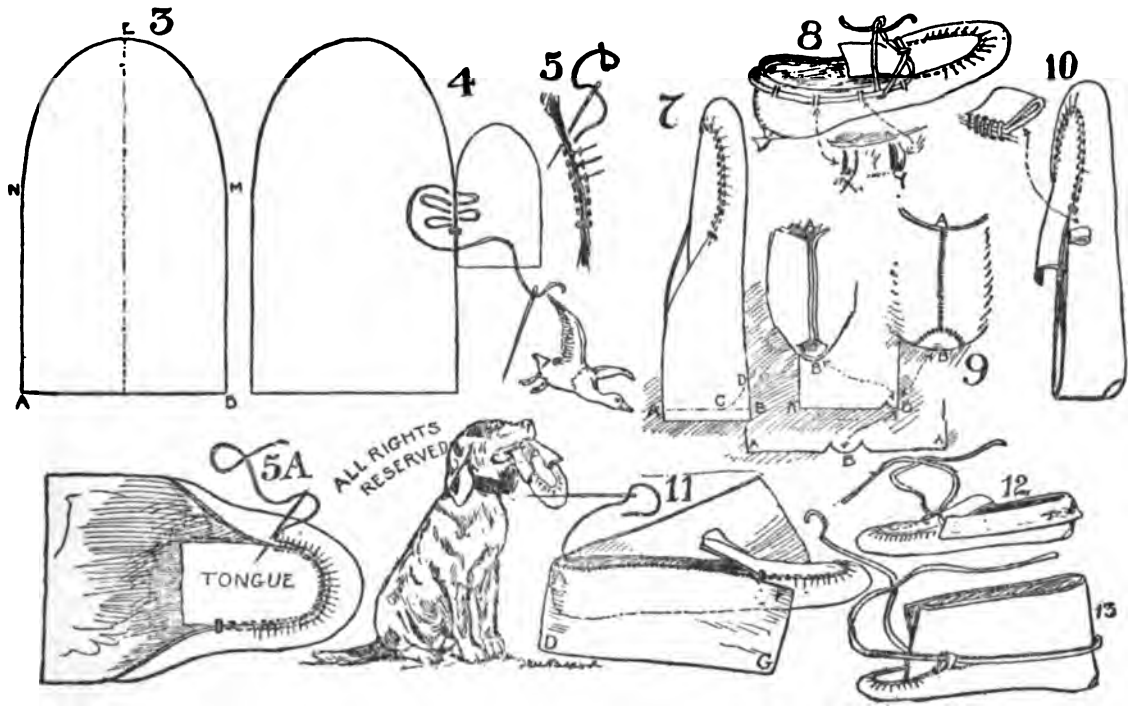
In order to make boots water-tight we were accustomed to place the boots by the fire to dry until they were as hard as iron and then with a rag we would rub them over with melted tallow. But that was a mistake, the tallow did not tend to soften the hard boots, and I have since learned from the Indians that the proper way to oil one's boots is when they are still moist and soft, and not when they are dry and hard. When one has it one can use neatsfoot oil for this purpose, or one may make a dope of equal parts of mutton fat, beeswax and sweet oil, mixed together in a small pan. Melt the mixture over a fire or on a stove and before it becomes cold apply liberally to the boots, particularly

about the seams and edges about the soles. This will make them waterproof for some time.

Slushy snow is the most penetrating thing a person can walk in; it seems to grind all the waterproofing off of one's foot-gear and open all the pores in the leather thus rendering frequent greasings necessary.

A pair of old slippers put on one's feet with woolen stockings drawn over the outside of the slippers make a fine warm protection for the feet in dry snow, as the snow does not enter the wool or make the feet cold. During the great blizzard of '88 I discovered that rubber boots were impossible to wear, even over two or three pair of woolen socks the feet would freeze; the thermometer was 12 degrees below zero and the snow was as dry as flour, or maybe a better simile would be, as dry as sand; the moment one put one's foot, encased in a rubber boot, in the snow the chill went right through boot, socks and all, making one feel almost as if one were standing barefooted in ice water. But when I took off the rubber boots and put on ordinary socks, then a pair of slippers, and then pulled some long golf socks over the slippers, I found I could tramp and wade anywhere with perfect comfort.

But the real thing to wear in the dry snow is moccasins, and every scout in America should know how to make this genuine American footgear, and every scout should have a pair of moccasins to wear about the house in place of slippers. The Indian moccasin is the only thing to



wear in a camp and in the forests. Of the many kinds of moccasins worn by the Indians we will select for our purpose those devoid of ornament. In the old Pioneer days the buckskin-clad scouts were very shy of wearing beadwork because the half-breeds always had their costumes beautifully embroidered with beads, consequently the white men wore no ornaments upon their fringed buckskin clothes unless the fringe could be called ornamental. Their moccasins also were plain, when homemade, but when they had acquired them by gift or purchase from the Indians themselves, then, of course, they were sometimes ornamented with stained porcupine quills or beads.

Moccasins made of the ordinary buckskin or moose hide, like the woolen stockings worn outside the slippers, are only suitable for dry snow, for they will soak up water as readily as a sponge. In Maine and adjoining parts of Canada the Indians make their moccasins of soft, heavy calf-skin or cowhide and an expert can make a fine pair of moccasins from the tops of an old pair of boots.

In order to make moccasins one needs a shoemaker's needle, some waxend, as they used to call it—that is, shoemaker's thread—and a shoemaker's awl. Secure a piece of leather large enough to cut from it the part shown by Figs. 1, 2 and 3, let the larger piece be at least two inches longer than the foot and wide enough to come up over the sides of the foot. This will give you a piece of leather the shape of Fig. 3, A B M E N. When cutting off the irregularities of the bit of leather see that the lines A C and B D, Fig. 1, are just two inches from and parallel to the lines J K and K H, also see that the distance from G to H is the same as from J to K.

Place your foot on a piece of paper A C D B, Fig. 1, and draw the outline of the foot, next fold the paper along the line E F, Fig. 1, as it is shown by Fig. 2, cutting it according to the dotted line B D, Fig. 1, straight to M, Fig. 2, then following the curve 2 inches from toes from M to E, Fig. 2. The smaller piece, or tongue, should be of the same shape as the larger piece, and in its width a trifle less than the third of the distance measured around the ball of the foot.

When talking to some scouts I was surprised to discover that very few of them knew where their instep is located, hence it may be well to tell them that the ball of the foot is the broadest part where the toes are attached, or as one scout said, from bunion to corn.

The largest piece of leather, Fig. 1, is about two-thirds of the measurement around the ball of the foot; thus you see that the two-thirds and the one-third will make the leather three-thirds or enough to cover the foot. Put the large piece and the small piece edge to edge, as in Fig. 4, and sew them together by first punching the needle holes through the leather with your awl. The first three stitches will bring the leather to the curves, and now you must exercise your gumption because the distance along the big piece is about twice as far as around the small piece, consequently you must pucker the big piece into crimps or ridges, one to about every quarter of an inch. This is easily done by making the stitch in the big piece about twice the length of the corresponding one in the small piece, as shown by Fig. 5 and 5A; when you do this properly there will be the same number of crimps on each side of the tongue or middle piece. That middle piece, you understand, is the part that fits on the top of the foot, and the big piece forms the sides and soles of the moccasins. When you have the moccasin thus far done place it upon a flat hard surface, stone or board, and pound the stitches

down flat with a hammer or a smooth round stone, then slip your foot into the moccasin and bring the back part around behind the heel and notch with a knife the edges of the leather. Now kick off the moccasin and if there is any spare leather at the heel cut it away by a straight cut, Fig. 7. Make another little slit to fit around the heel but do not cut this all the way through (see the dotted line C D, Fig. 7), you will note that there is a little "sail" still left. Now sew the seam up with an over and over stitch, Fig. 8, or you may cut it as shown at B B B and B, Fig. 9, and finish as shown by Figs. 9 and 10.

Place a smooth stone in the moccasin and with another stone pound the stitches flat. Next cut four double slits near the top and along each side of the moccasin, X and Y, Fig. 8, and one in the middle of the tongue or top piece of the moccasin, Fig. 8. Run a leather shoe string, or thong, through, allowing the ends to cross under the slit in the tongue, and bringing them over to the other side, pass either through a slit cut there for that purpose, or under the side string as shown in Fig. 8, and now your moccasin is done.

The lumbermen introduced the practice of using moccasins in this shape, made of oil tan leather; in fact this is the general pattern of all the moccasins, or moccasin-footed foot coverings, either the bootpack or shoepack, or larrigans. For a winter outdoor moccasin make it the form of Fig. 10 and stitch on the side flaps A D F G, Fig. 11, and it will then appear as shown in Fig. 13. Fig. 12 shows a summer moccasin with short turned-down flaps.

Hints on Over-night Hiking

IN walking through a primitive forest, an Indian or a white woodsman can wear out a town-bred athlete, although the latter may be the stronger man. This is because a man who is used to the woods has a knack of walking over uneven and slippery ground, edging through thickets, and worming his way amid fallen timber, with less fret and exertion than one who is accustomed to smooth, unobstructed paths.

There is somewhat the same difference between a townsman's and a woodsman's gait as there is between a soldier's and a sailor's. It is chiefly a difference of hip action, looseness of joints, and the manner of planting one's feet. The townsman's stride is an up-and-down knee action with rather rigid hips, the toes pointing outward, and heels striking first. The carriage is erect, the movement springy and graceful, so long as one is walking over firm, level footing—but beware the banana peel and the small boy's sliding-place! This is an ill-poised gait, because one's weight falls upon the heel alone, and at that instant the walker has little command of his balance. It is an exhausting gait as soon as its normally short pace is lengthened by as much as an inch.

A woodsman, on the contrary, walks with a rolling motion, his hips swaying an inch or more to the stepping side, and his pace is correspondingly long. This hip action may be noticed to an exaggerated degree in the stride of a professional pedestrian; but the latter walks with a heel-and-toe step, whereas an Indian's or sailor's step is more nearly flatfooted. In the latter case the center of gravity is covered by the whole foot. The poise is as secure as that

of a rope-walker. The toes are pointed straight forward, or even a trifle inward, so that the inside of the heel, the outside of the ball of the foot, and the smaller toes all do their share of work and assist in balancing. Walking in this manner, one is not so likely, either, to trip over projecting roots, stones, and other traps, as he would be if the feet formed hooks by pointing outward. The necessity is obvious in snow-shoeing.

Good shoes are essential to comfort and pleasure in hiking. The army type Munson last shoe is the best all around hiking shoe obtainable.

To break in a new pair of shoes the soldier stands in about three inches of water for five minutes, then goes for a walk on level ground. When the shoes are not in use, care is taken that they shall not be packed away tightly or otherwise compressed out of the true shape that the breaking in gave them.

At night the shoes are dried by hanging them upside down on stakes before the fire—not too close, for wet leather "burns" easily. Or, fill a frying pan with clean pebbles, heat them (not too hot) over a fire, put them in the shoes, and shake them around after a while. Before the shoes are quite dry, rub just a little neatsfoot oil into them. The remaining dampness prevents the oil from striking clear through, but helps it to penetrate on the outside, as the oil follows the retreating water.

The Hiking Outfit

Requisites carried in one's pockets: Watch; knife; money; compass; matches; handkerchief.

Requisites carried in the knapsack: Change of underclothes, stockings, and handkerchiefs; toilet articles; mending kit; grease for shoes.

Articles which, though not necessary, are altogether to be desired: Second outer shirt; second pair of walking shoes, particularly if the tour be a long one; sweater; pair of flannel trousers, light socks and shoes (gymnasium slippers are good), and necktie for evening wear; medicaments; notebook and pencil; postcards or stamped envelopes; a book to read.

The *pocket knife* should be large and strong, with one or two blades; leave in the showcase the knife bristling with tools of various kinds; see that the blades are sharp.

Let the *watch* be an inexpensive one; leave the fine watch at home; do not wear a wrist watch, particularly not in warm weather. At the wrists perspiration accumulates and the circulating blood is cooled. Any surface covering at that point, and particularly a close-fitting band, is in hot weather intolerable. But, regardless of season, a wrist watch is in the way, and is sure soon or late to be damaged.

The best *money bag* is a rubber tobacco pouch, a leather bill-folder and its contents will soon be saturated with perspiration.

A compass is a requisite in the wilderness, but not elsewhere.

Matches should be carried in a watertight case.

Toilet articles will include, at a minimum, soap, comb, tooth-brush and powder. A sponge or wash rag is desirable. A boy who shaves will, unless journeying in the wilderness carry his razor. The soap may be contained in a box of aluminum or celluloid; the sponge, in a sponge bag; or the whole may be packed in a handy bag or rolled in a square of cloth and secured with strap or string.

Towel and *pajamas* are not indispensable; because of weight, they should be classed as luxuries.

The *mending kit* will include thread, needles, and buttons, and here should be set down safety pins, too, an extra pair of shoestrings, and—if one wears them—an extra pair of rubber heels. A small carborundum whetstone may be well.

Chimney Gold

By J. Allan Dunn

Illustrated by J. M. Clement

"AW, come on, what's the use? You'll never get him. I've tried more 'n a hundred times, I guess."

The tone was a trifle contemptuous, so was the speaker's face, though it was good-natured enough, tanned and freckled and tow-headed as it was, topping a vigorous body clothed in rough garments of home-spun that ended at knees and elbows. George Hadsell was fifteen and country bred and he surveyed his cousin's attempt to beguile the big trout that made its home beneath the big rock with half-tolerant amusement.

Sid Haskell, within a month or two of the same age, but almost puny by comparison, pale of skin, his forearms and lower legs lacking the curve of muscle, his tender feet sensitive to the pebbles and the cold water, looked up at George without resentment. His rather short sighted eyes were serious, his lips were tightly closed and his jaw was set firm.

"The sun will be off the pool in a minute or two," he said. "Then he'll start ranging for supper."

"Lot you know about it. Where did you learn that stuff? In a pail in a back-yard in Boston?"

Sid flushed.

"Father has got a book in his library that was printed in England a hundred years ago and it tells all there is to know about fishing for all sorts of fish."

"Huh!" George had deep respect for his Boston uncle, a respect copying that of his father, but he still scoffed. "Who wrote it? And English fish ain't like ours."

"Some of them are. Trout, anyway. It was written by Isaak Walton and it is called the Compleat Angler!"

"I've got no use for anything British," declared George. "We're fightin' with 'em, ain't we? And you ain't much of a patriot when you have to try and learn about fishing out of a British book. Bet you you can't catch him. Bet you can't even make him show."

"I can see him now," answered Sid.

"Where?"

The city cousin kneeled and pointed across the stream and the country boy knelt beside him, skeptical that any one who lived in a town should be able to discover anything about the wild things with which he was familiar.

The stream, a branch of the Housatonic, twisting and curving down the long valley that led from Williamstown, past Lanesboro, to Pittsfield, all three communities boasting frontier forts that had served against the Indian raids and might soon be attacked by the forces of King George seeking to set down the insurrection of his American colonists in their fight for independence, was heavily shaded for much of its course by maples, beech, birch, oak and heavy undergrowth of fern and brush. The highway ran straighter in the same general direction, about half a mile east of the brook. Here and there the brook gleamed out among open meadows, set with stately elms, some of the stone-

fenced enclosures showing the green of corn, others fresh cropped in the July haying.

Where the two boys knelt the stream looped on itself with a big glacial rock in the bend. The current swung from one side to the other, tinkling foamy over the pebbles, eating into the soft bank, eddying about a pool that was deepest beneath the rock. The western range of wooded hills was purple with shade, shade pointed eastward wherever there was lift of ground or rock or tree. The eastern hills, dark with hemlock, amid which the white birch gleamed pink-barked in the sunset, bristled with forest. To the north the oldest mountain in America, Greylock, raised its saddle, to the south the valley opened out towards Pontoosuc and Oonota Lakes and the growing hamlet of Pittsfield. Sid Hadsell pointed to where a shadow floated poised in the amber water, his cousin caught the proper angle and saw the king of all the trouts, as he had seen him many time before but never lured him to the bait.

"That's him," he whispered, then nudged Sid in the ribs. "Don't move," he cautioned. "Not an inch. Lookit, to your right across the stream."

A buck stood there at gaze, the breeze blowing from him to the boys, a buck of four points, head down with soft black muzzle towards the stream, the graceful neck turned to where the boys kneeled frozen, the great eyes softly brilliant, questioning. It advanced slowly, two dainty hoofs in the ripples, lowered its proud head and drank. Then, lightly as a lifting shadow in the sun, it wheeled and was gone.

"Gee," said George. "'f I only had dad's flintlock!"

"What for? You wouldn't shoot him?"

"Sure I would. Deermeat's fine."

"Not this time of year." George got up indignantly.

"You think you know all about everything, don't you?" he demanded. "Much you do. I'm going on down stream, you can fiddle for that trout. 'f you get it, I'll give you fair best."

He swung off, peeled rod over his shoulder, disappearing round the loop, lost to sight in some willows. Sid said nothing more but little lines of determination showed about his mouth and his lips closed yet more firmly. Squatting back, he waited until the sun would be clear of the pool. Meantime he prepared. Five small chips of bark he tossed separately into the eddy and watched them swing round the pool, under the overhanging rock, dance uncertain and go on out again through a fringe of froth. Twice the shadow of the big trout moved slightly, ever so slightly, as he sized up the floating objects that the current brought to his hold.

Sid nodded to himself. He took his hook and carefully baited it with a caddis worm. His line was horsehair, well tied, pliable by moisture, almost invisible in the water. Above the caddis were three split shot. Reel he had none, nor rings to his pole, nor extra line. How to fight his fish he knew little of, nothing but theory gathered from Isaak Walton, but the light of sport was bright in his eye, he was matching brains against a wily old trout, he did not care so terribly much if he landed him—much as he desired such a trophy of the hunt—if only he could make the trout take his bait. It would have to be presented perfectly to fool that finny, crafty father of the brook.

The shadow of the rock fell over the pool entirely. A white butterfly struggling a little, came floating down, down, under the shelf. Up came the living shadow, there was hardly a wimple of the water as the fly was gulped, but Sid's heart

skipped a beat as he saw a gleam of royal color flame out on the side of the trout. His pulses still raced as he set his caddis bait afloat upon a little raft of bark and, handling his line, let it reach the eddy, swing out, around. . . .

Then he flicked the worm from the bark with a twitch. It struck the water, began to sink under the weight of the shot. Not far. Whatever the trout thought of a caddis worm descending in such fashion, he took the gifts the gods seemed to offer, as soon as he was sure they were good to eat and not counterfeit. Of recent years he had seen several morsels that had proved disappointing, many with bad stings and unsuspected strength to drag him against his will. But these had been presented with certain suspicious circumstances that he had come to recognize. The caddis—could anything be more natural looking, or welcome?

Sid saw the flash of that broad side as the trout curved—and he struck. The sudden indignant rush jarred his wrist and drove his hard-conned lore out of his head. All save one sentence, that flared word for word across his recollection.

I would have kept him within the bent of my rod—and it may be, by giving that great Trout the rod, by casting it to him into the water, I might have caught him at the long run.

Sid wasn't going to throw in his rod, if he could help it, but he held up the tip and kept the trout within the bend of it as it doubled and creaked and threatened to crack. He followed the rush into the water, calf deep, knee deep, up to his middle, while the pliant willow played the fish as it plunged downwards. Suddenly it turned, shot across the stream, flung itself out of the water, a shimmering, gorgeous thing in the sunset with the glowing spots and iridescent sides, a big jaw shaking to get rid of the hook. Splash and dive again and then a steady strain.

The rod almost doubled, an ominous sound came and Sid, despairing, flung the pole into the stream, watching it towed by the trout, floundering after it, wondering if the fish would ever tire. George, out of sight, he did not call to. This was his own fight, lose or win. The rod bobbed on—the hook was secure. It braked the trout's progress, not to be denied. Again it leaped, across the pole, shortening its leash. The pole caught between two boulders and bent like a bow before it slid clear. Sid lunged forward and retrieved it. It moved more slowly now, the trout was weary. As he lifted it he saw it was split and he shifted his fingers to the line, meeting the tug of the fish, letting out a little, guiding it to the shallows. The trout came in until its belly scraped gravel, then it thrashed and plunged and turned for deeper water. Sid flung himself upon it, literally scooped it out with his hands, flung it to the bank and pounced upon his prize.

He had broken all the canons of the Master Angler but he had the trout. It was a whale! He wondered how much it would weigh as he gloated over it. Then he heard a shout. George's head appeared the other side of the rock, scarlet with haste and excitement. Sid held up the fish but George did not seem to notice it.

"Soldiers comin' down the road!" he said. "Redcoats!"

"What'll we do?"

"Do?" said George. "We got to get back to the house. They'll scare the women to death. Dad and the two Talcotts are over to Waltons helpin' hay. Come on. Hurry!"

"Do you suppose they'll kill us?"

George Hadsell looked furiously at his cousin.

"How do I know?" he demanded. "I

reckon not. Are you afraid? If you are you better run to the hills."

"I don't think I'm afraid," replied Sid hesitatingly, standing with his fingers hooked into the gills of the big trout. "I wouldn't want to be shot. We haven't got any guns. But we've got to go to the house."

"Sure we have. Come on."

His face pale but his mouth and chin still resolute, Sid followed. They left the stream, cutting across to the farmhouse that stood back a little distance from the road. On a rise, masked by bushes, George crouched and pointed towards the highway. A company of foot soldiers had halted and were standing in groups, at ease. There was no mistaking their uniform, the red tunics with white crossings, the high white gaiters, the helmet hats that looked something like bishops' miters. There were two wagons, the teams standing in the traces with heads down, evidently tired from a heavy haul and a long trip over mountain roads. An ensign stood with the men. An officer on a fine gray horse was trotting along, gazing at the farmhouse. The glitter of arms showed where the low sun caught the bayonets.

Mrs. Hadsell appeared at the rear of the house, shading her eyes, looking anxiously towards the brook.

"Wonder if they've come from Williamstown way," whispered George. "There was fighting over there, day before yesterday, Father said." George's father had served with the revolutionary forces, had been severely wounded and retired to his farm, but his spirit was still militant, his belief in the final victory for liberty firm. It was three years since the glorious Fourth of July, 1776, when the Continental Congress had declared the thirteen Colonies Free and Independent, dissolved from allegiance to the British Crown under the name of the Thirteen United Colonies of America, and fifty-five patriots had signed the Declaration of Independence.

Sidney remembered the night in Boston when the garrison drew up in King Street, changed that day to State Street, firing thirteen salutes by thirteen detachments, the bells ringing and, in the evening, the burning of the ensigns of royalty, the lions, scepters and crowns. George would never forget the night when his father went by night to Easton's Tavern in Pittsfield, a year even before the Declaration was drawn, one rainy May day evening, there to meet with Captain Edward Mott and his little band of sixteen Connecticut patriots, holding council at midnight, with five others of local sentiment, in favor of wresting "the Key of North America" from the grasp of Great Britain. Colonel James Easton was host, Ensign Brown was there. George Hadsell, Senior, had joined in the night march to Williamstown to join Ethan Allen and the Green Mountain men, and so to the successful surprise of Fort Ticonderoga. A wound, exposure, hard campaigning, indifferent surgery, had brought him back to his farm in the Berkshires, in the middle of the fighting zone, half a cripple but still with a burning patriotism that was shared by his son.

Nor would Sidney have given George best in love of his country and what that country was fighting for—Independence and Liberty. Both of the boys understood well the principles, both were fired from the torch of Democracy. Sid's father was a Boston merchant, one of those who had protested vigorously against the Stamp Act and who, on the first of November, 1765, had ordered the funeral tolling of all the bells of Boston while, through its streets, a coffin inscribed with the word LIBERTY in large letters, was carried to the grave while minute guns were fired and an oration made. To both the boys the sight of a redcoat represented tyranny.

George had the stronger body and, save for those things with which he was familiar, the slower brain. Sidney had imagination that conjured up instantly all that the visit of the troopers might mean to the farm and its inhabitants. But he made up his mind to face them with his cousin.

George jumped out of cover and waved his hand to his mother, starting to run down hill to her. As Sidney followed, the officer set his horse at the stone wall. The jump was beautifully made and man and horse came easily up the slope, intercepting the boys.

"What farm is this?" demanded the Britisher. "Who owns it?"

George was dumb. Sidney did not answer. The officer laughed.

"You needn't be scared," he said. "We don't eat boys. Not while there are fat trout in the brooks," he added, his eyes on the big fish that swung from Sidney's hand. "That will be delicious, broiled for my supper," he went on, half in jest.

"I didn't catch it for you," flared out Sid.

"All right, my son. Now then, who owns this farm? Your father? If so, where is he?"

The officer's eyes had become stern with the change in his voice. George blinked back at him, then blustered.

"This is my father's farm. George Hadsell. And he's——"

Mrs. Hadsell had come up the hill, somewhat out of breath.

"My husband is coming along the road now, sir," she said. "What do you wish?"

The officer uncovered and bowed in the saddle at sight of Mrs. Hadsell, flushed with her haste up the hill, her ungrayed hair a little out of bonds, still comely and alert in her homespun gown, her eyes bright, her attitude fearless, slightly resentful.

"Madam," he said, "I call here, in the fortune of war that sways one way to-day another to-morrow. At present, being paymaster to the troops, I am bound for Albany. I crave water for my men and horses, leave to rest here for the night, with what you may care to grant of shelter. Food we have with us—unless there is hospitality in the farmhouse for my ensign and myself. I have already been refused trout—but——" he raised his eyebrows.

"Since you come in the fortune of war that grants you superior force," said Mrs. Hadsell, "I make no doubt that we shall give you such shelter as you need. If you will kindly make your arrangements with my husband, who is now turning in at the gate."

The Britisher shrugged his shoulders, plainly chagrined at the chill in Mrs. Hadsell's voice, and cantered down hill again to the farm lane into which Hadsell and his two hands were coming with their wagon. The two boys went with their mother to the house.

"Do we have to eat with him, mother?" demanded George.

"They are in force. It is policy not to vex them, for the damage they might do. It is strange they did not take the Hancock road north to Albany instead of coming this way," she said, half to herself. "They have the pay chest with them. It may mean a retreat."

She busied herself with preparations for supper while the boys went up to the attic and peered through the fanlighted window at the troops with fascinated eyes, watching them go into the orchard, stack their arms, take off their tunics and wash at the brook, while some tested the small green apples with wry faces and jests. The elder Talcott, hired by Hadsell, walked out from the house with a gallon jug in each hand which he presented to a man uniformed as a sergeant. The sergeant

sampled the contents and called up his men who came hurrying at the tone of his voice.

"Cider," said George disgustedly. "I wouldn't give 'em ditch water if I was Dad."

"They'd only take everything if he wasn't nice to them," said Sid.

"If he's the paymaster and got the gold with him it's too bad we couldn't get hold of it. Get it out of the wagon and put in rocks—or something," suggested George. "Heard what maw said. She's right. This ain't the road to Albany—not the nearest. I bet there's been a fight and their troops have been licked. They're retreating and the gold goes ahead. Gee—I wonder how much there is of it?"

Sidney's brain was buzzing with schemes as a hive hums with bees in trouble. It was bad enough to see the sinews of war belonging to the other side, it was aggravation of the worst kind to know that the enemy had to be fed and treated with some show of politeness.

When they went down, attracted by the odor of supper that wrought upon their already healthy appetites, they found that the trout—the big trout—was to be the main dish and that both the officers were to eat at the family table. The boys resented but forgot much of their resentment as they ate and listened to the talk. Mr. Hadsell was cleverly drawing out the Britishers, that was patent. And Mrs. Hadsell had been right. The arms of the Colonists had been triumphant and the Britishers had been rolled back to a new position that was not so favorable as to commend the keeping up of the paytrain. Fresh retreat might be expected.

"I'll want a place to put my chest for the night," said the officer in charge, who announced his name and rank as Captain Renfrew. "Can't leave it in the road in the wagon, you know. I hardly suppose you have a safe, sir."

"There is the oven yonder," suggested Mr. Hadsell.

Captain Renfrew looked at the oven door by the side of the fire-place opening approvingly. The house had, as was usual, a great central chimney from which hearths opened on the downstairs rooms. They were eating in the kitchen, without apologies to their guests. However politic Hadsell might consider his hospitality it was neither spontaneous nor cordial enough to call for efforts beyond the ordinary.

The captain surveyed the baking oven, running his sword into it, testing its size.

"It will do nicely," he announced. "I'll have the pay chest brought in. We'll sleep in here to-night. Don't put yourself out, madam, the floor and a blanket are sufficient. Now, Mr. Hadsell, about some grain?"

Hadsell went out with the officers and the boys besieged Mrs. Hadsell with a storm of question and supposition. On her part she had some news which she gave them.

"The British fell back yesterday in a skirmish," she said with her eyes sparkling. "Your father says they have been fighting to-day. A man came down from Potter Mountain and said he had heard the sound of the guns and seen the puffs of white smoke from the musketry, back of the setting walls. Our men were advancing, driving the British slowly down the valley. Your uncle hopes for a rout," she said to Sidney, "only that would drive more of the redcoats down upon us and they might be revengeful."

"If they were not in too much of a hurry," said George.

"Or if they were not cut off," said Sidney.

"They will follow the gold," said Mrs. Hadsell. "Hush, they are coming back again."

Four soldiers came back with the officers, staggering under the weight of an iron-bound wooden chest. Big as the oven was the chest was too big for it and the captain unlocked and opened it, taking out bags that chinked as he set them on the floor. The ensign drove the boys away from the door and closed it. Presently the four men came out. Two went away, one mounted guard outside the door and the other curled himself upon the hall floor beneath a rug, waiting until his turn should come. Mr. Hadsell fetched two trucklebeds and some bedding for the officers. The boys heard them thank him.

Then he sent them off to bed but not to sleep.

"Seem mighty afraid of their gold," said George. "Wonder who they're afraid of, with a sentry outside the door."

"There are more posted along the road," said Sidney. "They are afraid of another licking over to Hancock. They've got to pay the troops to satisfy them. There are not very many real British fighting us. Most of them are hired Hessians and they've got to be paid regularly."

"Or they'd quit?"

"Likely. Look at the fires in the orchard."

The two boys looked through their window at the bivouac bonfires, most of which soon died down. There were stars showing but no moon; it was not due until well after midnight.

"Gee," said George, "I wish I could slip over the mountain to Hancock, through the gap, and tell our people the paymaster is here with the gold."

"That's why the sentries are out. He's afraid of some surprise. George, is there any other way to get into that oven?"

"What do you mean?"

"It seemed to go an awful long way back when he ran his sword in. Looked to me as if it must go nearly the whole depth of the chimney."

"Guess it does."

"If we could get in the parlor and pry away the bricks at the back——!"

"Gee——!" George half-smothered a whoop in the bedclothes. "You're all right, Sid," he said. "We can do it. From the side of the parlor hearth. Mortar's out of some of the bricks already. Father said they ought to be relaid. When the house was built he couldn't get the sort of brick he really wanted. They're soft. Mortar's crumbly. Jimmy, Benjy Franklin, Sid, we can do it!"

"Where's the tools? How are we going to get into the parlor?"

"Tools are down cellar. Don't need much 'sides a bar. There's a door and steps into the parlor from the cellar. Cellar hatch ain't fastened, I don't believe. Father usually does it the last thing but the officers were in there and I guess he forgot. It's closed outside but it ain't bolted. I'll bet it ain't. Come on Sid, get on your clothes. Never mind your shoes."

Sidney was taken aback at the prompt acceptance of his idea and the practical unfolding of it.

"How are we going to get down past the sentry? He's right facing the foot of the stairs. If he's awake. . .?"

"We ain't going downstairs. I got my own stairs. I've sneaked out this way more'n once to go after coons. See that branch?"

Sidney looked and saw where the boughs of a maple, thickly-leaved, came close to their window. It almost obscured their view of the orchard where occasional figures moved between the fires. George softly opened the window by taking away a loosely secured portion of the frame and removing both sashes, kept in their place by snap springs and bolts that worked in

sockets. This left the frame an opening about the boy's height and close to three feet wide. He pointed through the gap.

"There it is, the one that curves up. It's easy to jump to and then we can slide down and keep out of sight while we slip round to the cellar hatch. No one that side of the house. Gee, Sid, it's easy as eating pie."

"How'll you get back?" Sid did not yet seriously contemplate the notion. It seemed madness to him to leap out of the window into the dark on to a half-seen limb.

"Same way. It's harder, a little, but I've done it fifty times, I'll bet. You got to get the bough swinging a bit and then you jump for the window as it comes up. Sid, we can do it. We'll snake out that gold and we'll tote it over beyond the brook to a big woodchuck hole I saw last week. It's a whopper. We'll slide it all down and come back. We'll put back the bricks an' everything. Then we'll go through the gap an' to Hancock to our men. Jim Woods is second in command over there. It won't matter if they don't surprise them, 'cause we'll have the gold stowed away and if they run they won't be able to find it and take it with 'em. And when they miss it they can't take it out on any of us, if our troops get here by the time the officers wake up. Gee, we ought to have drugged 'em."

Sidney's alert mind took in all the details, all the possibilities of George's improvement on his own scheme, recognizing that a lot of it was feasible, that they might actually get the gold and bring up the Colonials from Hancock, enough of them at least to chase the pay detachment away if they did not capture it. But his soul shuddered at the thought of the method George proposed. George knew just where the bough was, he had made the leap, he was an adept at climbing trees. Sidney had never climbed a tree in his life. He lacked agility, judgment. A slip and he would be at the bottom with a leg broken, if not his neck. They would find him there, suspect something. . . . His imagination galloped.

"What's the matter with you? Afraid?"

That stung him like a whip. Hurting the more because he wasn't sure of the answer. He was afraid he could not make the leap more than he was afraid to try it.

"I don't believe I could do it," he said. "I can't see where to land. You've done it lots of times."

"Yah! I had to do it the first time, didn't I? You're a scared cat, that's all. Why a kid of half your age could do it easy."

George's voice held illimitable contempt. He did not mention the fact that the first time he had made the leap was in broad daylight and in fall, when there were less leaves to confuse. He meant to spur his cousin on. He was beginning to despise him and it showed plainly in his voice.

"I'll go first," he said. "I can grab you when you come. It ain't more'n six feet from the window to where the bough forks. You can grab at me and the other branches. Maybe I better do it by myself."

Sid felt the sickening sensation of nausea, water rising in his gorge. His knees were weak as he said.

"I'll tackle it. It was my idea first."

"All right. Better wait a little, though, till some of 'em go to sleep. It's early."

That was the meanest part of it, Sidney thought, waiting after he had made up his mind. But he saw the wisdom of it as fire after fire went out and the troopers composed themselves for sleep. Below them the light in the kitchen vanished.

"Now," said George. "You watch me.

You got to jump a little to the left. You can't miss it."

Sid's eyes, peering into the night had become adjusted. He saw the bough much more plainly now, curving up from the mass of the tree. It did not seem so impossible but he shivered at the idea of the back journey. For he knew he would only be a handicap in the trip through the mountain gap if they got the gold. In such travel George was tremendously his master, even by daylight. At night he would never make it. He would have to come back to the room, replace the window. . . .

"Here goes," said George. He stood in the frame, almost filling it, fingers on the frame. He crouched slightly, leaped forward. The bough swung up, down and up again with a soft swish of leaves and Sid heard his cousin's soft *"hist"* in the darkness.

Sid fought against a faintness in the pit of his stomach, called himself a coward, spurred himself to the jump and, on the second *hist* launched himself into space. There was nothing terrific about the leap save as his inexperience augmented his fears. His bare feet landed on the broad bough that gave way a little beneath him as he clutched for the supporting branches rustling above and about him. He felt George's hand close about his ankle and there he was, a trifle giddy in the reaction of safety, and a little proud of himself for having performed the feat. But, in the moment of satisfaction, he dreaded having to return by that way.

George leading, they clambered to the main trunk and at last dropped softly to the ground, gliding unchallenged around the side of the house to the cellar hatch. As George had predicted, it had not been bolted, overlooked in the excitement, and they slowly, cautiously raised it, crept down the steps into the cool cellar and halted with their hearts beating fast with the adventure.

"I could have wiggled in through a window up the north end," whispered George. "But this is better. Come on, I know where the lantern is and I've got a snap flint and a strip of match." He seemed to have the eyes of a cat as he went through the dark cellar with its mysterious smell of earth and fruits, of cider and hams. He gave one hand to Sidney until they reached the ladder that led up to the kitchen. Up this George crept alone and Sidney heard something clink slightly at the top. Then the click of flint and steel, the sight of George's face as he blew at the spark he had caught on his niter soaked bit of linen, the flame, the glow of the candle and the light that sprayed through the perforated sides of the tin lantern. George started to come down.

"Hear 'em snoring up there? The officers? I . . . what's that?" He shrank back, hiding the lantern. Sidney heard the creak and lift of the cellar hatchway. Someone was coming down. He got back of the ladder, George crouching above him, listening to the slow, heavy, uncertain tread of the man who was descending. They had been seen after all! Sidney's brain worked fast. They would say they had come down after apples—he wondered whether there were any, decided against it, in favor of preserves. Anyway their plan was spoiled, and. . . .

He heard a gasp from George that echoed his own. The man had a slow match already lighted and this he was swinging about the cellar. It did not illumine much. He was evidently looking for something—or someone—and he was a soldier, for they could see the gaiters.

Suddenly he grunted and stopped, stooped. There was a trickling noise, a gulping, the spit of a sharp stream on the hard ground of the cellar, the noise of

liquor falling into a vessel, more gulping and then a long drawn sigh of satisfaction. The figure straightened and retraced its steps, up the stairs to the hatchway, letting it down after him carefully.

"Gee, that scared me stiff," said George. "Thought we were caught for sure. It was that sergeant Dad gave the cider to, after more. Hope he won't come back again. We got to work quick. I've got a spike bar and the trowel they masoned the cellar with. Come on."

The cellar was supported by a partiwall through which they passed by an opening and went up more stairs to a trap hooked on the underside. George lifted this with the hook rug that was over it and, Sidney trailing, they emerged in the Hadsell parlor. Within two minutes they were inside the hearth, swept for the summer, crouching like miners while they worked at the mortar between the bricks. As George had said, it was not of the best materials, hot winter fires had destroyed it and brick after brick came away with surprising ease to be deposited behind them. They made some noise and often paused, fearful of being overheard, wet with sweat from the hot night, their cramped positions and strenuous efforts.

Sidney, tugging at a brick, felt a puff of warm air in his face.

"We're through to the oven," he whispered exultantly. The opening was enlarged enough to let the lantern through at arm's length, then a head.

"I can see 'em," whispered George. "Wait till I get the poker." The tool was an iron rod, bent and flattened at one end, curved at the other to a handle. With it he fished for a bag and drew it along, taking it out to hand it to Sidney who set it softly down. A faint chink came from the guineas inside and it was heavy.

Twenty leather bags in all they carried down triumphantly to the cellar and through it to the hatchway. Then they sat down on the lower step for further consultation and to get their breath.

"Must be two thousand guineas there," said Sidney. "Maybe three. Want to look?"

"No time," said the practical George. "We got a lot to do yet. How long you suppose we've been working. I bet you it's late. Moon's up." A streak of pale light showed through one of the narrow windows built for ventilation in the stone foundation wall. It was after midnight.

"They're all the other side of the house," said George. "Except maybe a sentry in the road. Maples'll hide us from him. I'm goin' to get the wheelbarrow. It was oiled yesterday and don't squeak. We'll get this down that woodchuck hole. You get the bags to the top step while I go after the barrow."

George opened the hatch and was gone. One by one Sidney lugged the bags up the stairs. The excitement was still on him but he was conscious of being tremendously tired and, to his chagrin, sleepy. He was not long recovered from an attack of fever and had been sent to his uncle's to get back his strength. The day had overtaxed it. A pain began to throb in his side, aching like a toothache. He was nearly played out and he knew that he could never make the trip across the mountain with his stalwart cousin. The terror of the tree and the jump up to the window crowded on him and he tried to fight it off.

This was British gold they had got. Gold to pay and feed the enemies of his country. Why, he and George were doing a wonderful thing. But he could not thrill to it. The hurt in his side spread to his head. The hatchway opened and George called down to him softly to bring up the bags while he watched. It took the last ounce of effort for him to tote

them to the barrow. The mounting moon gave plenty of light but there was shadow enough for them to keep in unseen. He staggered as he carried the last bag and George noticed it.

"Played out?" he asked. "You couldn't make the trip through the Gap, anyway. All you've got to do is to get back to bed and stay there. I'll be back by sun-up."

It was on Sidney's lips to say that he could never make the climb and jump unless George helped him but he braced himself. There was no time to waste. It might be later than they thought. He must do his share.

"You'll have to take back the barrow," said George. "I won't have time. Come on." The country boy was fresh as new paint, thought his cousin, envying him. And George would get most of the glory, arriving in the colonists' camp, galloping back perhaps on a horse.

The load was heavy. The bridge along the lane was in bright light and they had to shove the barrow through the shingly stream. But they made it, going through rank grasses to George's woodchuck hole down which they shoved the bags. There was a tell tale swathe left through the dewy grasses.

"It'll straighten up with the sun," said George. "They'll never guess. Put the barrow back by the side of the woodshed. I'm off. Say, we did it, didn't we? Good-by, Sid."

"Good-by and good luck," replied Sidney. He watched George make his way to the stone wall of the upper lane, leading to the pasture and the wooded hill. It was tree-bordered and dark. George was safe. Now he had to finish his end of it. He would not let himself think of the climb until the last minute. It seemed a long way back with the barrow. Once he heard the challenge of a sentry and his heart pounded, though it was from the road. He crouched against the boards of the shed.

"Who goes there?"

"The rounds."

"Advance rounds."

He breathed more easily. It was the sergeant. Soon he might be coming back. Sidney made a dash for the tree, spurred by haste and, catching at a low bough in his jump, scrambled, digging his toes into the bark, up to the first fork. There he crouched, with all the strength out of him for a few moments. Above, the boughs and branches stretched with their leafage, in a labyrinth of peril.

Sidney never forgot that climb, the creeping out on the limb that swayed as he hitched along until he could see the black gap of the window. The moon splotched the clapboards of the house. Soon it would reach the frame. He remembered how long it shone in that window the night before when he had been unable to sleep.

"I've got to do it," he told himself. "Got to. *Got to.*" George was away, climbing the mountain trail at high speed. It was up to him to clear up at this end. Slowly he got to his feet and stood, holding on to a stout bough to one side and a little above him. His side ached prodigiously and his temples throbbed. The dizziness that had never quite left him since his illness, whenever he was tired, came over him as he strove to nerve himself. He pressed down on the bough and it swung like a springboard. Up and down and up again. Next time he would do it. And, with a tiny prayer on his lips, he sprang. The limber bough sped him, he caught at the frame, one foot hit the sill, his other was on it. He was in the window, through, stumbling, flat on the floor.

When he came to, realizing he had fainted, the moonlight flooded the room.

His legs shaky at the knees, he managed to put back the sashes and the sash trim, to doff his clothes and creep into the vacant bed. Oblivion swept over him again, with a feeling of content. He had done his part, the gold was safe, George was racing to the camp at Hancock.

He woke to a babble of angry voices. The sky was flushing to early dawn. His head was heavy and he was tired, but he felt a surge of energy at the crisis he knew had arrived. The officers had risen early and had missed the gold. He could hear the storming voice of the British captain, his uncle's deep bass.

"I hold you responsible. The gold has been stolen. Three thousand four hundred guineas, you Yankee renegade! I'll string you up for this unless you give it back. I'll have you shot for a thief."

His aunt's anxious voice broke in and his uncle silenced her.

Sidney sat cold on the edge of the bed. He had not reckoned on this. He had looked forward to George's triumphant arrival. Now they talked of shooting and of hanging. And his uncle was innocent. If only George had come. Perhaps he had not got through. He might have failed for all his cleverness and knowledge of the trail. The camp might have moved on.

"We march in thirty minutes, sir," said the officer. "I'll give you to then. Meantime I'll search the house. Whoever took it shall pay, I warrant you that."

Thirty minutes respite. Would George arrive? He looked out of the window to where he could see a bit of the hill road far up. He fancied he saw dust there, rising. It *was* dust. It must be the Colonial troops from Hancock. He prayed it might be, in an agony of apprehension.

He was on the horns of a dilemma. If he went down—he must go down—for he could not let his uncle be sacrificed to the firing squad for what he had done himself—they would ask for George. Yet he must appear to save Mr. Hadsell. He must say that he had taken the gold—he and George. What the angry captain might do in reprisal he imagined only too vividly. For Sidney saw very plainly one thing, without conscious direction of will he had hardened, crystallized to one resolve. He would not tell where they had put the gold. Three thousand four hundred guineas—it was a greater sum than they had imagined. Its loss would mean much to the British troops; its gain would mean infinitely more to the Colonial soldiers. When he had suggested there might be some way of getting the gold from the other end of the oven he had done so largely in a spirit of adventure. Now, with the gold hidden, with the possibility of that cloud of dust arriving soon, with the British officer searching the house—he could hear footsteps as he sat on the bed edge, wide eyed—that spirit changed to patriotism. No—he would not tell.

The officer had said he would give Mr. Hadsell thirty minutes. Long before that time George and the Colonial troops, if it was them on the mountain, would be here. Until then he would—what was it his father had called it?—he would bluff the captain. If the troops did not come, even then he would bluff until—he saw a squad lined up, himself against the barn blindfolded, and rose to shut off that vision.

The dust was lower on the mountain, much lower. He fancied he caught a quick glint of something that flashed as if it was steel.

The door opened and the British officer appeared on the threshold, Mr. Hadsell behind him.

"Where's the other lad? Look you, look at the floor, the bed linen, this boy's clothes. With the soot on the floor of

that room downstairs. It's plain to see who turned the trick, though maybe not who put them up to it."

The British officer's voice was furious, his face almost as scarlet as his uniform. It was evident that he was in a towering rage that was not appeased by his latest discoveries. Below, Sidney heard the orders of the sergeant, the shuffle of men coming to formation.

The captain advanced into the room, followed by the ensign. Both caught him, none too gently, by an arm. Two soldiers thrust aside his uncle.

"So, my young rogue, you are the culprit! Who set you on to this?"

"It was my own plan," Sidney heard his voice, bold, defiant, as if it had come from someone else. His throat was dry, surely he could not have spoken, he thought.

"Where is your brother?"

Here was a question he could foil without lying, since the officer mistook George for his brother.

"I don't know."

"You'll face me out, will you? See here, my lad," and the captain's voice now, for all his flaming rage, was cold and sinister, "you show me where that gold is, inside of five minutes, or you'll be saying your prayers before the muskets of my men. I mean it. Tell me now, and I'll let you scot-free, the whole thieving pack of you. Cross me, and I'll find it if I have to pull the house down. If you force me to that I'll leave some examples behind to show you cannot steal from His Majesty's forces. Now then, talk. Take that man out of here."

Mr. Hadsell, trying to protest, to interfere, was lugged from the room down the stairs by main force. Sidney, pale but strangely resolute, faced the captain.

"I won't tell you," he said. "It isn't thieving. It's war."

"It's war, my young cockerel," replied the captain grimly, taking out a watch. "I'll give you just two minutes before trimming your comb. You won't be the only one to be punished," he went on. "Don't waste the time. Either make up your mind to tell me where the gold is or say your prayers. Let go of him, Harrod."

They released him and he went over towards the window. Now he could no longer see the cloud of dust. Trees hid the lower road along the mountain, save for one place where it mounted a bare ridge, just before it joined the Williamstown-Pittsfield road.

It seemed to him he could hear the ticking of the seconds by the captain's watch, keeping time with his own heart, marking off the little time that was left him. The leaves rustled gently outside, a fly came buzzing into the room. Through the trees he could see the redcoats marching in order towards the road, all save a squad of eight who remained close to the house, bearing their muskets.

"One minute," snapped the captain. "Harrod, go down and give the sergeant orders to load with ball cartridge."

Sidney glanced at the officer. The captain's face was no longer red but stern. Would he really kill him? Then he looked out of the window again, past the maple that had served as a ladder, through a gap in its foliage, gazing to the bald ridge. In the lane the cows were lowing, coming up for the milking. Chickens clucked, ducks quacked as they made for the brook. They would do the same thing to-morrow, and he. . . .

His heart leaped. There was dust on the ridge, dust swiftly moving, cored with hurrying figures. More dust coming, a bigger cloud, sparkles of light in its midst! He turned to the British captain, his face flushing as the blood ran fast through his veins and his voice rang out.

"I'll not tell you where the gold is," he said, "but I'll tell you where my cousin went, not my brother. He went across the mountain to Hancock, to bring our men. He's coming now. They've just crossed the ridge. They'll be here in ten minutes."

The Captain gave him one swift look, half-convinced by the triumphant note in the boy's voice. He cast one hasty look at the ridge where the dust rose and the weapons glittered in the midst of it. Then he swung about, his face scarlet again.

"You young devil," he said. "I've half a mind—Harrod, it's the enemy! Post a rear guard by the bend in the road behind the stone wall. No—curse it!" Biting his nails in indecision and chagrin, he hurried from the room, followed by the ensign. Sidney heard his voice giving orders. Cries came up from the road where the outposts had not yet fallen in. Mr. Hadsell ran up the stairs in post haste and wonderment.

"They've gone, lad," he said. "The two officers on their horses, the wagons, the men afoot in double time! What's happened?"

Sidney told him. The sound of the retreat swept south towards Pittsfield. A noise of galloping horses came from the north. There was a cheer, and as uncle and nephew went down and out of the house to the road, where Mrs. Hadsell and the rest of the household stood wondering at the swift change of events, George, astride a gray-dappled horse, by the side of an officer in blue and buff, dashed up, jumped from his mount and ran up to the group. The colonial officer gave a brief salute, reined in and gazed back to where men on the run were coming down the road. He waved his drawn sword to them.

"Scatter, lads, in open order! Cut across the fields by Farnum's to the turn. After them!" The revolutionists vaulted the walls and raced across the pastures to cut off the fugitives. Their leader wheeled his horse towards the house.

"In time?" he asked. "You've held the gold?" Sidney answered him.

"That was a gallant deed, my lads," he said to the two boys. "We need that money. I'll see you later."

"I was afraid I'd be too late," said George as the officer leaped his horse over a wall and dashed after his men. "I nearly ran into the wrong camp, and we had to come around East Mountain this morning, to avoid them. When did they miss the gold? You said it was safe, Sid."

"I said yesterday that I thought you were afraid," he told Sidney when he heard what had happened. "I want to take that all back. Gee, I don't believe I'd have held out!"

It was a generous disclaimer and Sidney discounted it.

"I guess you would," he said.

"Better come in to breakfast," suggested Mrs. Hadsell. "I'm all twisted yet as to what really happened. And we'll have to have a spread for our men when they come back. I hope they get them all."

Mr. Hadsell said nothing until they were at the table. Then, according to custom, he spoke a grace, with special references to deliverance from the hands of the enemy. The *Amen* ended, they all listened as he held up his hand. The sound of scattered firing came to them faintly.

"The better the day, the better the deed," he said. "It sounds as if our men were within reaching distance, at all events. Do you know what day it is, Sidney?"

"Wednesday, I know."

"The date, George?"

Both boys shook their heads.

"It is just three years since the Declaration was signed. It is the Fourth of July. An anniversary that I venture will ever be remembered in America."



A company of foot soldiers had halted and they were standing in groups, at ease



The Ballad of Pirates' Gold

By Edmund Leamy



I met one day with a sailorman a-sitting beside the sea,
A merry old man with a merry old eye, and he cocked that eye at me.
I took him along to a hidden cave, a place that I only knew,
And there 'mid the sound of the breakers' roar I asked for a tale of the blue;
I asked that the tale be an old-time tale of Pirates and Pirate gold—
He spat out a quid from the side of his mouth, and this is the tale he told:



I

"Long, long ago a Pirate ship
Sailed out across the sea,
The Jolly Roger at the peak
And proud and brazenly
For she was full of yellow gold
And deep iniquity.

II

She was full of desperate men,
A score of men and two,
The victors of a thousand fights
That shames the ocean blue.
They only feared one ship that sailed
A Cutter, Revenue.

III

And so the Captain bellowed out,
He dark of face and eye,
"And distance cove o' Dead Man's Isle
Lies Westward 'neath the sky.
The swag we took we 'ides!" said he,
And winked a wicked eye.

IV

And Hans and Pete and Bloody Mike,
They trimmed the sails a spell,
And One Eyed Dick held to the wheel
And steered the ship right well,
And sang a song with lusty mirth,
"Dead men tales never tell."

V

All night the ship sailed palely on
Beneath the misty moon;
All night their voices chorused
A wild and Pirate tune;
At dawn they anchored fast within
A palm-tree fringed lagoon.

VI

Then 'neath a tree on Dead Man's Isle
A good two fathoms deep,
They cached away the yellow gold
Till night began to creep,
When wearied of the finished toil
They soon were sound asleep.

VII

But Captain Bill and One Eyed Dick,
They slept not, but awoke
Slim Pete, and Hans, and Bloody Mike,
And low and long they spoke,
And laughed with hushed, fierce merriment
As if at some grim joke.

VIII

Then through the ranks of sleeping men,
Ere came the crack of day,
Crept Hans and Pete and Dick and Mike
And cruelly calm were they,
Deep in their comrades' hearts they struck
And killed them where they lay.



IX

Up rose the red sun in the sky
And shone upon the dead,
Upon the trees, upon the grass,
And everything was red;
As from the scene with frightened cries
The frightened pirates fled.

X

They sought the ship, but, stars above!
It had a reddish hue!
The decks were red, the spars were red,
The sea was red, not blue.
The curse of Cain was on them there
As terror grew and grew!



XI

"Up anchor!" shouted One Eyed Dick.
"Up anchor, and away!
I cannot bear the ghosts of men
That come with hate to slay;
With twisted hands that long to grip,
And sightless eyes of gray!"

XII

Then Bloody Mike, and Pete and Hans
With wild and fearsome cries,
Hauled hard upon the anchor chain
And made the anchor rise,
And hoisting sail they sought to leave
Behind the crimsoned skies.





XVIII

The Captain watched the craven fools
With wrathful look and frown.
He watched each one rise, sink, three times,
And laughed to see them drown;
But shuddered at his crimson hands
That had been sun-burnt brown.

XIX

And then the ship began to move
As silent as the stars,
And ghostly figures came and rigged
A noose rope in the spars,
And every ghost a seaman was
And knife wounds were their scars.

XIII

Loud swore the Captain in his wrath,
And murderous was he;
But moveless stood the blood-red ship
Upon the blood-red sea;
And with the pirates on the decks
Walked ghosts in company.

XX

They swarmed about the Captain there,
They grinned with fearful glee,
Their icy fingers tied the rope
About his neck, and free
They swung him from the cro' jack yard
High o'er the silent sea.



XIV

And ghostly laughter echoed each
Wild pirate laugh and shout,
And ghostly, icy, unknown fear
Their courage put to rout;
Each time they tried to steer away,
The ship would go about.

XXI

And suddenly the moon arose
And all was calm as glass,
Green were the leaves upon the trees,
And green the mountain grass,
And listening birds beside the shore
Heard ghostly shadows pass.

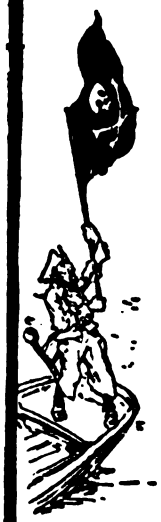


XV

They could not leave the land behind,
Nor find the open sea,
Though blew the wind upon the sail
And blew it strong and free,
The ship as if at anchor stood
In grianing mockery.

XXII

But out to sea, with hull well down
The pirate ship sailed by
With creaking blocks and rigging that
Made hopeless moan and sigh,
The loneliest thing that ever sailed
Beneath a lonely sky.



XVI

Until the sun sank down at last
In red and baleful pride,
When Pete and Hans and Bloody Mike
Plunged wildly o'er the side,
And swam far from the cursed ship
Upon the cursed tide.

XXIII

And never reached she any port,
Nor sank beneath the sea,
She still sails on a lonely thing,
And sailors have told me
They've seen her pass them in the night
As ghostly as could be.

XVII

The Captain turned to One Eyed Dick,
"We two are left," quoth he.
The laughter of the ghosts arose
In wild hilarity.
"You are but one!" Dick cried to him,
And jumped into the sea.

XXIV

And hidden far on Dead Man's Isle
Two fathoms 'neath the ground,
Where shadowy figures haunt the air
And mysteries abound,
Lies buried, pirates' yellow gold
Which never has been found.

"O Mighty Mariner Man!" I said, "you're woefully wise and old,
And that is one of the finest yarns that ever I have been told.
I shudder to think such a terrible thing has happened upon the blue;
But tell me O Marvelous Man, is every bit of it true?"
Then hurt he looked and fierce he looked, "Do you doubt my word?" said he,
But, an eyelid closed over one blue eye, and he winked a wink at me.



Making Model Aeroplanes

By Francis A. Collins

MANY builders of model aëroplanes seem to be in doubt as to whether they should construct models which rise from the ground or must be launched by hand. In most model clubs the country over, by far the largest proportion of the models are launched by hand. A longer flight is obtained as a rule by such models. It is obvious, of course, that the saving in weight by doing away with the skids or wheels has a direct influence upon the speed and distance qualities of the machine.

Many contests are still conducted, however, with models which rise under their own power. Some interesting problems confront the builder of these models which are well worth studying. The old type of model with skids mounted on wheels is practically obsolete. The saving in friction by using wheels is very slight and their weight is a factor to be considered. Also, a model in landing again is likely to break these wheels or jam them, making repairs constantly necessary.

If you are experimenting with models which rise under their own power, it will be best to use skids made of some light strips of bamboo or tan which are bent in such a way that a very small part of their surface will touch the ground. The friction caused by the skids brushing over the ground for a few feet when rising is, after all, very trifling and by adding a little power to the motor this is readily overcome. The presence of skids has another advantage in safeguarding your plane when it lands. They act as a spring or buffer which takes up the shock.

It is more difficult to construct an effective model which will rise from the ground, but this very difficulty lends added interest. It will be necessary to adjust the planes so that the model will keep an even keel while soaring upward. This can be controlled by changing the distance between the planes and adjusting the angle of the plane to the frame.

The ideal model of this type will rise from the ground in a few feet, soar upward at a gradual angle and then settle down automatically to a horizontal position ready for the flight. These flights are very interesting to watch and when successfully accomplished give great satisfaction to their designers and builders. Even if the flight is shorter than in the case of the model launched by hand the satisfaction of building such a model will be found to repay one for the extra trouble involved.

A frequent question is as to the loading of the aëroplane in proportion to its size. It may be laid down as a general rule that rudder-driven models will carry from three to six ounces to every square foot of supporting surface of the plane. The lifting power of the models varies according to design, but even the most successful model cannot carry more than six ounces. Another general rule governing the proportions of a model aëroplane which every model builder should bear in mind is that the proportion of the length of the machine

to its width should be as three is to two. There are special models where the length is proportionately greater, but this equation holds good for most models. As a rule, the equation governing the proportions of the model aëroplane and the power of its motor to the friction of its plane is complicated. When the dimensions are small, the ordinary equation would not hold true. In the case of large machines it is different. It is better as a rule to proceed by the rule of thumb and test the proportions of your aëroplane and the power of your motor by actual experiment.

It is a common mistake among model-builders to imagine that models can be built any size if the proportions be correct. Despite many experiments, successful rubber-strand-driven models have not yet been made much more than five feet in length. When engines are installed, there is no limit to the size of the models. There is also a definite limit to decreasing the size of aëroplanes, but models less than two feet in length are not effective. The most successful long distance model should come between the two.

The study of automatic stability for models is very interesting, but so far has not met with practical results. Model builders will find this a very interesting field of experiment.

For most builders of model aëroplanes the propeller is the most fascinating part of the machines. The average boy soon masters the details of building the frame and wings and constructs propellers and motors which give good results. After he has succeeded in constructing a model which will fly for considerable distances, he will probably be satisfied with his work, and in designing and building future machines will copy more or less closely his early designs. But it is different with the propeller. It is this fascinating little screw which after all does the work, and the length of flights depends largely upon it. In other words, the propeller doubtless offers more opportunities for improving a model than any other detail.

Most model builders will at one time or another have the ambition to construct some gearing device for controlling the propeller. An immense amount of time has been expended along this line. It appears a very easy matter to arrange a simple system of gear wheels which will make it possible to control the revolutions of the propeller. By adjusting small and large wheels it is theoretically possible, of course, to gear the motor up or down. The plan, however, has never worked well in practice.

The best way to control the speed and distance qualities of your motor is by changing the pitch of the blades. If the pitch is low the propeller naturally meets with less resistance in cutting its way through the air and therefore tends to revolve more rapidly. By increasing the pitch, the power of the propeller being the same, the blades naturally are slowed down. It will of course be understood that the higher the pitch of the propellers the greater is their driving power. If, therefore, you are working to increase the speed of your machine use propellers of higher pitch and at the same time increase the power of your motor by adding more strands of rubber.

It is impossible to lay down hard and fast rules to govern the pitch of your propeller, the size of your model and the number of rubber strands. The best plan is to test out the relation of these three factors by actual flying tests. Remember that it is very easy to go to extremes in the matter of propeller, pitch or motor power. If your motor runs with a loud whirring sound and quickly dies down your motive power is too great for the size or

pitch of your propeller. If the propellers, on the other hand, turn so slowly that the model aëroplane flutters to the earth you need more power. The long flights of several thousand feet are obtained when these factors are properly adjusted.

Some builders of model aëroplanes will attempt to design wings with absolute scientific accuracy. There is an immense amount of literature on the subject relating to the wings of large man-carrying machines. Other builders will prefer to proceed by the rule of thumb, so to speak, by building planes with approximate dimension and trying them out in actual practice. There are exact tables governing the dimensions of large wings which make it possible to calculate their lifting power exactly, but considerable variation will be found when it comes to building planes for models.

In designing your plane, bear in mind that a narrow wing with a high aspect ratio will yield a greater support than a flat surface of the same area. Tests have shown that on small planes the center of pressure is situated about one-third of the distance back from the front or entering edge of the plane. In the case of planes which are flexed the center of pressure occupies about the same position. When a plane remains horizontal a very narrow surface will have a greater lifting power than a flat plane of the same area. There has been a tendency to reduce the depth of the plane and increase its curve. The lifting power of the plane, again, is increased as speed increases. When a model aëroplane drives rapidly forward, it requires less wing surface than when it flies slowly. Let the aëroplane travel up or down so that the wing is tilted from the horizontal, and these factors are quickly changed. It is calculated that a plane at an angle of fifteen degrees has only one-half the lifting power of the same plane in a horizontal position. The plane with a high aspect ratio is more stable in flight than a surface of greater depth. It is well to remember that when the planes tilt from the horizontal the center of pressure moves backward or forward. If the curves of the plane are well drawn, it adds both to lifting power and stability of the model. Remember that one square foot of surface will support about one-half a pound of weight when traveling at high speed and on an even keel.

The designer of model aëroplanes enjoys many advantages over the builders of models of a few years ago. Much of the work has been standardized. It is no longer necessary to make model after model, and experiment with a great variety of wings before the proper size and form can be found. As the result of years of patient experiment, carried on by thousands of model builders, the proportion of the wing and the lifting power of various forms is definitely known in advance.

An effective model especially suited for winter flying can be made with wings of solid wood. With the directions heretofore given in mind, construct a single stick monoplane driven by one propeller. The stick should not be much more than 2 ft. in length, preferably of spruce. Two planes can be cut from thin strips of white wood. Make the larger plane 2 in. by 10 in. and the smaller plane 2 in. by 4 in. The white wood may be only ⅞-in. thick.

The edges of the planes should be cut down and sandpapered. It will be found a good plan to curve the plane slightly near the outer or entering edge by holding it over the steam of a kettle. When it is softened fasten the plane over some curved surface and allow it to dry in this shape. The lifting power of these planes, small as they are, will be found surprisingly large. A little experimenting by changing

curves will prove very interesting. The larger plane should be fastened rigidly to the stick by being tied with rubber bands so that it can be moved back and forth readily to find the best position.

The smaller plane should be mounted in the same way near the forward end of the stick.

Equip this plane with a small propeller of not more than 5 in. This may be mounted by attaching an L shape piece of metal to the lower side of the stick at its extreme end, and running the shaft of the propeller through a hole drilled in the vertical surface. The other end of the rubber strand of the propeller should be attached to a hook placed on the lower end of the stick at the forward end.

As soon as one has constructed a model aëroplane which will fly successfully he should add a model hydro-aëroplane to his fleet. They are easily made, for it is a very simple matter to convert an ordinary land machine into a water craft. The hydro-aëroplane is simply a model aëroplane mounted on floats or pontoons so that it will float on the water and rise from its surface or descend to it. One of the advantages of the water-born craft is that it is less likely to be smashed up by landing on the water than upon land.

The model hydro-aëroplane is supported by three floats, two placed at the stern and one at the front of the plane. These are so constructed that the wings are raised about ten inches above the surface of the water, the model floating on an even keel. The motors are wound up in the usual way when the model is set upon the water and the propellers released. Instantly the little craft begins to move rapidly over the surface of the water and after traveling ten or twelve feet should begin to rise and fly for several hundred feet before alighting. It is fascinating work to adjust the planes and weight the machine so that the height of the flight may be controlled.

Make the three pontoons first. Secure six pieces of thin spruce one-eighth of an inch thick or less, measuring two by three inches. Each of these should be cut into the form of an ellipse, all having the same size and form. The pontoon is made by fastening two of these together with the aid of light bamboo strips. The space between the two pieces of spruce should be about two inches. You will need at least four strips for the purpose. The whole is then covered with bamboo paper and painted three coats with a waterproof varnish or one of the special preparations which come for this purpose.

The pontoons are attached to the under side of the plane by means of strips of light wood. Strips of rattan or bamboo are best for the purpose. Remember that the frame should be as simple and light in every part as possible, since the hydro-aëroplane must raise the weight of its pontoons as well as its own body before a flight is possible. The flights made with hydro-aëroplanes are not as long as those made by the ordinary models, but it is excellent sport to watch them rise from the water.



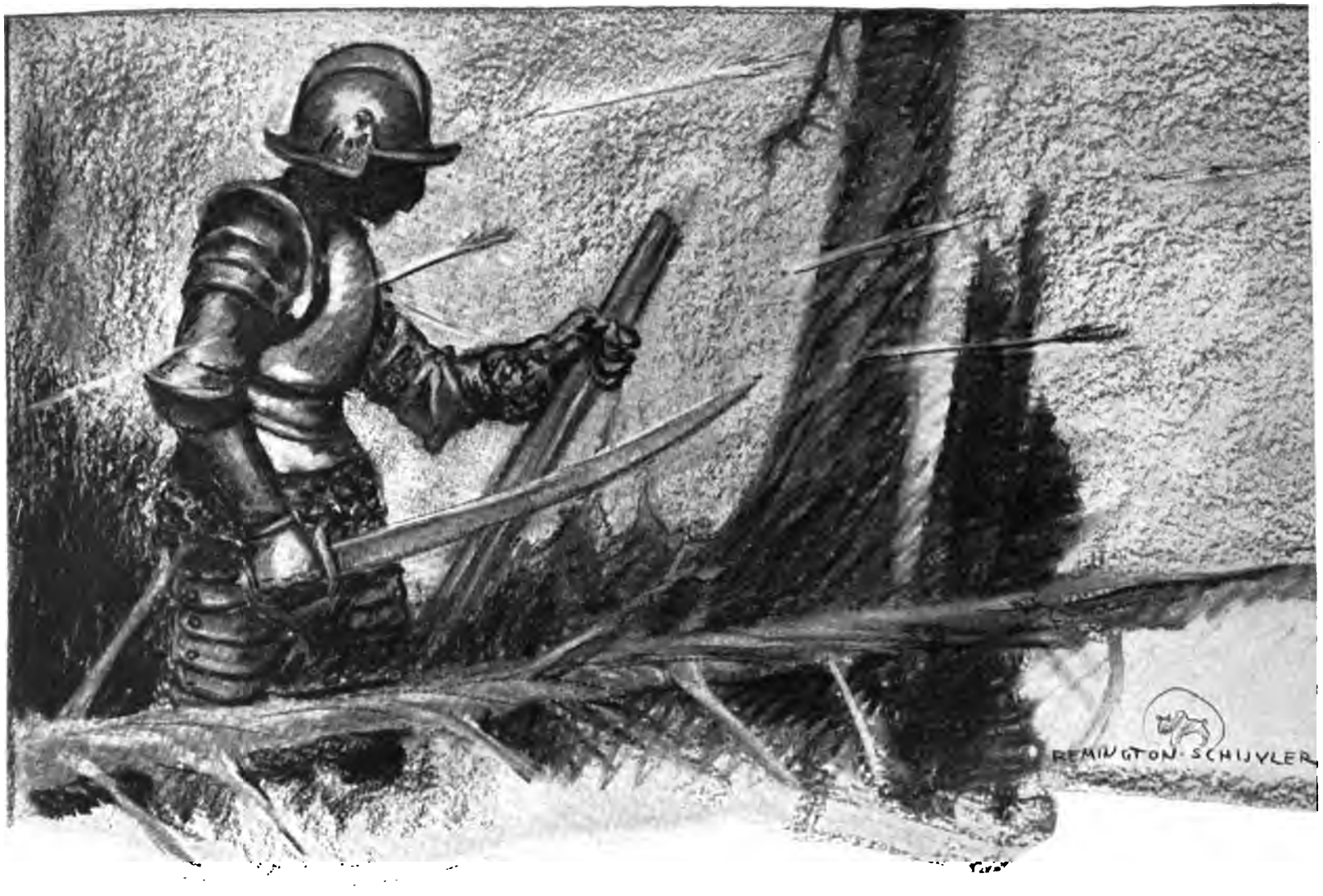
WHEN THE SPARKLE'S ON THE SNOW

Oh, we've learned to know the forests,
"Bark, leaves, flowers, fruit or scent,"
Munched the sassafras and beech leaf,
Cooled beneath a dogwood tent.
We have tapped the sap in Springtime,
Shook the shagbark in the Fall,
Made a willow with to whistle,
Rolled the birch for cow-moose call.

Oh, we've learned a lot more wood lore
Than the scouting test requires.
We have hiked up hills through hemlocks,
Skied past spruce and cedar spires,
We have bunked beneath the balsam,
Lit with stars and trimmed with snow
And we've nestled in the needles
While the pine-tops murmured low.

But for all we've learned of wood lore,
And some Latin names we know,
We go back to childhood's language,
When the sparkle's on the snow,
Then we're out to range the hillsides
In a hunt for symmetry,
Then the fairest and the finest,
Is the species, Christmas Tree.

—Clark Elbert Schurman.



To them, it was like some monster from another world, ruthless, dominating, impervious to earthly perils, and they shivered with more than cold as they watched its slow, irresistible advance.

The Moon God

By Joseph B. Ames

UNDER the shelter of the great pine that crowned the rocky headland, Okahwis stood motionless, staring across the narrow strip of sand to where the gulls soared and dipped above the restless sweep of dark water. Often he came to this high, lonely spot, backed by the boundless forest, facing the endless sea, to stand for hours, watching the tumbling gulls, listening to the voices of the Mighty Waters, dreaming strange, fanciful dreams.

One of the most common, yet of which he never tired, was an imaginative picture of what lay beyond that seemingly endless waste of water. Of course, there was the island of Nope, the abode of Megissogwon, the terrible magician. Everyone knew that, and Okahwis could never think of this awe-inspiring person guarded by monstrous, fiery-eyed serpents, without a little tingling thrill of horror. But was that all? Was Nope the end of everything? Or were there, perchance, other marvels out there on the bosom of the mighty waters?

Sometimes the Indian boy's imagination soared to fascinating heights, and he could picture all sorts of amazing, incredible things. But to-day was not a favorable occasion. The air was bleak and cold, and overhead the sky was leaden. A gray mist drifted wraithlike over the water. The chill east wind cut through the boy's doeskin leggins and made him draw the beaver mantle closer about his bare chest. Now and then a flurry of snow, the first real sign of coming winter, drove across his line of vision, momentarily obscuring the tireless, swooping gulls.

"*They* know," murmured the boy, stamping one cold, moccasined foot against the frozen ground. "If only one could learn their talk——"

His low voice broke suddenly in a queer, high, startled note and then was silent. In an instant the slim, wiry frame stiffened and he bent slightly forward, eyes dilated, peering into the mist. For a long moment he did not stir, save that his fingers tightened convulsively on the bow he held. Then his heart began to throb violently, and he drew back a step as if to take shelter behind the trunk of the great pine.

But all the while his wide, straining gaze never wavered, for out there, behind that misty curtain, something was moving shoreward—something huge, monstrous, incredible, which might have been one of his own fantastic dreams come true. But this was no dream. Vague and illusive it might be in outline, yet it bulked unmistakably vast and real as it came steadily closer and closer across the water.

For a brief space Okahwis took it to be some monstrous bird, huge beyond imagination. Then a sudden gust of wind tore aside the mist, and he saw that the object was neither beast nor bird. It was a canoe, hundreds of times larger than any he had ever known—a canoe with billowing wings of white that soared above it and carried the strange craft swiftly shoreward.

As he watched it with a kind of horrible fascination, a dread possibility flashed into Okahwis' mind. It was the bark of Megissogwon from Nope! For some unknown purpose the giant wizard had left his distant island to bring terror and death to this peaceful Country of the Bays. Flesh and blood could stand no more. With a stifled gasp of horror, the boy whirled around and fled blindly into the forest.

How long he ran Okahwis did not know. At first, fear lent him wings, but gradually the peaceful silence of the familiar woods soothed his troubled spirit, and at length a sense of shame rose up within him to halt his flying feet. He had never run from anything before. Though thoughtful and dreamy beyond the average, his courage had never been disputed by even the most fault-finding warrior of the tribe. What would Massasoit, his father, say when he learned that his only son had fled in wild panic without even making certain what sort of peril threatened?

The blood flamed hotly into Okahwis' dusky face, and with a grunt he pulled up at the very edge of the village clearing. A searching glance told him that he had not yet been seen, and turning swiftly, he sped back along his trail. It was not an easy thing to do. Far rather would he have faced Mishe-Mokwa, the great brown bear, with only his stone hatchet as a weapon. But he forced himself to it and at length, creeping stealthily up the hillside, he reached the sheltering trunk of the sentinel pine and peered cautiously around it.

What he saw filled him with a sudden, keen curiosity which almost conquered fear. The great canoe lay motionless on the water a little way from shore, wings folded and at rest. There were no signs of the dread Megissogwon, but gathered on the beach Okahwis saw a group of persons like to his own people in size and shape. They were strangely garbed, some in curious, shining garments that glinted grayly like the smooth, reflecting surface of a woodland pool. Their faces, instead of being copper colored, were white; their hair was yellow as the ripened maize, and in many cases it grew upon their faces as well as heads.

Shivering a little with cold and terror, Okahwis watched them warily. All save one knelt upon the frozen ground, heads bowed or lifted to the leaden sky. The murmur of their voices came indistinctly to the boy, and though the words—if words they were—meant nothing, there was something in the tone which reminded him of spell-casting powers of his own medicine men.

"They are gods!" he murmured in an awed whisper. "White gods from the sea."

The words had scarcely left his lips when the whole party rose and one of them lifted a heavy, stafflike object into the air. An instant later there was a flash of fire, a puff of white smoke issued from one end of the magic stick, and a roar of thunder sent Okahwis scuttling backward through the undergrowth.

This time he did not return. Pale-faced gods who commanded the lightning and the thunder were far beyond his ability to understand or cope with. He did not halt until he had reached the sachem's lodge, and though Massasoit heard his amazing story with outward calm, Okahwis knew by many little signs that his father was very much disturbed.

What happened at that hurried secret council of warriors and medicine men, the Indian boy did not know. Spies sallied forth and returned. There was a general air of uneasiness and suspense about the village, and the medicine men made visible preparations for their dread, mysterious rites.

Gradually, by bits and snatches, Okahwis learned that this was not the first visit of the white gods. Many moons ago they had appeared to a distant tribe of Massachusetts Indians, who unfortunately set upon them and killed a number. As a punishment the sea gods sent abroad a terrible plague which swept over the country and slew thousands, not only of the Massachusetts, but of their allies, the Wampanoags. Its passing left the tribes weak and decimated, and likely to be an easy prey to their ancient enemies, the Narragansetts, who had not been harmed.

Okahwis shuddered at the story and when the medicine men, accompanied by all the able-bodied warriors of the tribe, betook themselves next day to the sacred swamp to send up solemn invocation and cast spells against the strangers, he prayed fervently for their success. But as the days passed and nothing happened, his growing curiosity began to uproot fear. He longed to know what the mysterious white ones were doing so quietly out there along the sea shore, and at length he decided to go and see.

He told no one, but slipped silently away one afternoon and crept stealthily through the forest, using his extensive woodcraft knowledge to the best advantage. The chill hand of winter had lifted for a space, giving place to a last brief touch of Indian summer. The grateful warmth had brought out Cheemaun, the squirrel, who chattered in the tree tops. Birds sang and twittered unconcernedly; a red deer, browsing in an open glade, suddenly scented the Indian boy, and with a frightened toss of his head, fled crashing through the undergrowth.

Then all at once Okahwis was aware of a strange, alien sound. It was a dull, rhythmic thudding, faint at first, but growing louder as he advanced. Uneasy and perplexed, the boy redoubled his caution, but it was not until he had almost reached the limits of the forest that the prolonged, reverberating crash of a falling tree shed a little light upon the puzzle.

Ten minutes later he was peering wide-eyed from a safe hiding place upon a scene transformed. The beach alone was as he had seen it last—the beach, and beyond it the restless, ever-moving sea. He looked in vain for his friend, the tall pine, but it was gone.

Instead rose the squared walls of a log structure, and scattered about it and along the ridge were groups of the white strangers, busily working with various strange implements. Several were engaged in felling trees, and Okahwis' wonder grew as he saw the ease with which the shining blades of their great axes bit deep into the trunks. One of them was working not more than twenty paces off, lopping away limbs with swift, amazing ease. Okahwis sighed with envy at the thought of what one might do with a magic ax like that, and then his glance swept upward to the stranger's face, and a thrill of fresh surprise shot through him.

It was the face of a boy, not much, if any, older than himself, white, hairless, with blue eyes that held a touch of pleasant friendliness in their clear depths. It was not the face of one who would wantonly blast with lightning or send forth pestilence for the sheer joy of killing. Okahwis, peering curiously through his leafy screen, warmed toward the stranger, god though he was, and watched with pleasure the deft, sure movements of the magic ax.

He came again next morning, and the day after, and each time his first thought was for the young white god, his first act to search him out from amongst the crowd of other workers. There were others he noticed in passing, chief amongst them a short, broad figure wearing a shirt of that curious, hard, shining material, who seemed

to be a person of authority. But always his interest centered in the younger one until, little by little, there grew up within him an odd sense of familiarity with this white stranger.

Then, on the fourth day, the unexpected happened. Okahwis, speeding along the narrow trail, had reached a point about a mile from the shore, when of a sudden the peaceful stillness of the forest was broken by an amazing clamor. Off to the right a little way there came a sharp, startled cry followed by a snarling, savage growl and a crashing in the undergrowth. Another sharp cry sounded ending in a note of pain, more growling, and then—silence.

Swift as a cat, Okahwis whirled and plunged into the bushes. He knew the voice of Mishe-Mokwa, the big brown bear. That other cry was human, and his first thought was that one of his people had fallen beneath the savage paw of the great brute, and needed help. A dozen strides took him to the edge of a narrow, trampled glade, girdled with young hemlocks, where he paused abruptly, halted by a warning growl as the bear rose suddenly to his haunches and stood there facing him, huge paws slightly extended.

Face downward, motionless, a human figure sprawled amongst the trampled hemlock saplings, but of this Okahwis was no more than merely conscious. Tense body bent slightly forward, his narrowed gaze was fixed intently on the lifted paws of the forest monster. One hand gripped his stone hatchet; the other his bow, which he knew he had no time to use.

Thus for a long moment the two faced each other silently. Then with a sudden, lightning motion Okahwis lunged with his bow and the wicked paws whirled at it furiously. Torn from his grasp, the tough piece of ash flew through the air, but at the same instant the boy leaped forward like a flash, his keen edged hatchet rose and fell, striking the brute's head with a sickening, crunching sound.

With a roar of fury that echoed through the woods, the bear plunged forward, apparently unhurt, and Okahwis fled swiftly from him. Though his bow was gone, he still held the hatchet. Ducking suddenly behind a tree, he lifted this above his head, and as the animal thudded past, he brought it down again with all his strength upon the creature's skull.

Mishe-Mokwa gave a snarling roar of pain, stumbled on a few paces, half turned and then suddenly his great limbs collapsed. There was a brief, desperate struggle to rise, but evidently those two crashing blows had done their work and presently he rolled over and lay there motionless.

Panting a little with excitement, Okahwis made sure that he was dead. Then he turned swiftly and hastened back to the glade, his heart thumping and his whole being filled with a strange, unwonted ferment.

When he saw there was not altogether a surprise. Some subtle sense had already told him that Mishe-Mokwa's victim was not one of his own people. But when he reached the clearing to find that the unknown stranger, who lay there dazed but conscious, was none other than the young white god he had watched so often, his heart leaped strangely, sending the blood coursing through his veins like liquid fire.

The white lad had raised himself painfully on one elbow and was shaking visibly. Across one temple the bear's claws had left their bloody imprint, and at the sight of the Indian boy carrying that crimsoned hatchet, a tremor of fear flickered over his face like the ripple on a woodland pool. It was gone as swiftly, leaving only a puckered wrinkle on the smooth forehead and a brave, defiant glint in the clear blue eyes. But Okahwis had not failed to note

its presence, and of a sudden a great light broke upon him.

This was no god at all, but merely a boy like himself, save that his skin was white. A god would have blasted Mishe-Mokwa with forked lightning and trampled triumphantly over the body of the stricken bear. No god would lie helpless as this one did, nor show even a momentary tremor of alarm. The discovery brought to Okahwis a curious pleasure impossible to analyze, and dropping his hatchet he knelt swiftly beside the injured stranger.

"There is no danger," he murmured in his soft, liquid tones. "Mishe-Mokwa is dead. Pale-face lie quiet while Okahwis brings water from the brook."

The puzzled pucker deepened, but that look of strained defiance faded a little. Evidently he did not understand the words, but was reassured by the Indian's tone, and catching up his hatchet, Okahwis sped off through the woods.

Pausing beside a canoe birch, he cut from it a wide strip of bark, which was deftly formed into a cup and fastened with two thorns. Returning with this full of water, he carefully bathed the claw gouges, which were fortunately not deep. When he had finished and settled back on his haunches, there was a brief silence as the two surveyed each other curiously. Then suddenly the white boy said something in a pleasant, friendly voice and reaching out abruptly, he took Okahwis' hand and pressed it thankfully.

Began then a strange and interesting companionship between the two boys. It was evident from the beginning that each liked the other and directly by signs and pictures drawn on birch bark, another meeting was planned for the following day.

Okahwis told no one of his strange encounter, fearing that his father might forbid any further meetings with this marvelous new friend. When he awoke next morning to find the north wind blowing and that grateful, belated warmth of the past few days vanished before its chill blast, he fretted lest this might keep the white boy away, and uneasily sought the appointed spot more than an hour too soon.

But he was not disappointed. In due season the white youth appeared and there followed a week or more of daily meetings in which their mutual liking progressed by leaps and bounds. By the simple expedient of pointing at something and pronouncing its name, they soon learned a number of nouns and a few verbs in each other's tongue, and before long could make themselves understood with fair accuracy. There were many difficulties, of course, but gestures helped greatly and at a pinch there was always the red pigment and the birch bark to fall back upon.

Okahwis learned that his friend's name was John. He also discovered that he had come from an island far across the mighty waters to make his home upon these shores. Once he saw and handled one of the magic axes, and again, with fear and trembling, he was initiated into the mystery of the black thunder-powder, of which a tiny handful touched with glowing tinder flashed up in a fearsome white flame and made a sound like muffled, distant thunder.

Okahwis' eyes were opened to a whole new world, and his outlook upon life so completely changed that it was small wonder he remained more or less oblivious to the storm clouds so swiftly gathering over the Wampanoag nation.

As a result, the sudden knowledge of their peril burst upon him with the force and unexpectedness of a thunderbolt. The long dreaded advance of the Narragansetts against the weakened tribes had begun, and a war party of over a thousand

braves was less than three days' march distant!

When the news was imparted by his father, Massasoit, the hot blood of a long line of sachems flamed up fiercely in the boy. In that moment Okahwis forgot everything save that his tribe was threatened and that he had a man's part to play in the imminent, unequal contest. Bitterly he regretted the past days of idleness which might have been put to some real use in preparing for the fray, and with others of his age he flung himself now into those preparations with an absorption which filled his every waking thought.

But when forty-eight hours had passed and the hastily summoned Wampanoag warriors destined for the first line of defense began to gather in and about the village, Okahwis felt the inevitable reaction. He was not conscious of any personal fear. What was to be would be, and he was in the hands of the Great Spirit. But young as he was he could not help realizing how woefully inadequate their forces were against the overwhelming might of their ancient enemy.

And where could they look for any aid that could arrive in time? Every available warrior within reach had already been gathered in. If only that little band of pale-faces beside the sea had been gods as he at first supposed, Okahwis felt that they might perhaps have been induced to cast the weight of their might with the hard-pressed nation and scatter the oppressors with thunderbolts and pestilence. But they were merely human, and too few to be of much avail.

A sudden, tingling thrill went through the boy and the partly finished arrow dropped unheeded from his relaxed fingers. *Who beside himself knew that they were not gods?* Suppose one of them should suddenly appear before that advancing horde of Narragansetts, clad in that strange shining mail and armed with the magic thunder-stick? Might they not well fly terror-stricken from the supernatural, just as Okahwis himself would have fled before he came to know the humanness of his friend, John?

Stirred to the depths of his being by this new and unexpected possibility, Okahwis proceeded at once to put it into execution. Without a word to anyone he slipped out of the village and took the trail toward the pale-face settlement.

It was late in the afternoon when he reached the edge of the clearing. The great log lodge was finished and the white people had begun the erection of smaller dwellings close about it. Amongst the workers Okahwis presently discovered his friend, and promptly gave the signal which had been agreed upon between them—the caw of a crow thrice repeated.

From his hiding place he saw John raise his head and glance doubtfully toward the forest. Okahwis watched him anxiously, realizing that he had broken his last appointment with the white boy, and wondering whether the latter had been angered and would refuse now to respond to the call.

Even when the signal was repeated, John did not move at once. But presently he ceased his work and strolled over to a spring bubbling up a dozen yards or so from the edge of the clearing. A few minutes later he had entered the forest and stood face to face with Okahwis.

The hour which followed was one of extraordinary mental stress and strain for the young Indian. His explanations and the plea for help which fairly bubbled from his lips had to be laboriously transmitted in scraps and snatches by the aid of every device at his command, and when at length it became evident that John did really understand the situation, Okahwis

felt actually limp and exhausted by the effort he had made.

"You—you come?" he asked anxiously.

For a moment the white boy did not answer. His face was strained and thoughtful and one strong hand plucked absently at the dead mosses on the ground beside him. At length, raising his eyes and meeting the Indian's troubled gaze, he drew a long breath like a swimmer taking an icy plunge, and nodded.

"Yes, I'll come," he answered simply.

The arrangements were quickly made. Okahwis understood, though imperfectly, that his friend would also have to act secretly; that the other pale-faces would never countenance his taking part in such an adventure. He would have to wait for several hours after dark to obtain the things he needed and leave the settlement unseen. Okahwis promised to be on this spot an hour after moonrise, and then they separated.

Not daring to return openly to the village lest he be seized upon for some duty which would interfere with the appointment, Okahwis nevertheless sought the neighborhood to try and find out how matters were going. To his dismay he found the warriors on the move. Creeping close to one of the lodges, he learned that the Narragansetts had come up with unexpected speed and that Massasoit was placing his forces on a hillside beyond the village to make the best possible defense against an attack which might take place at any moment.

The news threw Okahwis into a panic. He knew that unless the white boy appeared before the beginning of the fighting, his aid would be useless, for once engaged in the heat of conflict not even the appearance of the supernatural could halt the savage foe. Dismayed, he turned about and hastened back to their meeting-place, where he passed the intervening hours pacing the trail or peering anxiously into the clearing, driven nearly frantic by the enforced delay.

But at length his weary vigil ended and out of the shadows of the log huts a strange figure stepped into the moonlight and advanced toward him. From head to foot it was clad in glinting armor which shone in the bright, silvery light like a garment of enchantment. From his waist there hung a long, straight sword. One hand held the magic thunder-stick, while the other clutched a small, heavy wooden keg. Okahwis greeted him with a murmur of delight.

"We must speed," he whispered. "The enemy have come."

The white boy made an expressive gesture.

"Do not expect too much, Okahwis," he returned in English. "Speed and steel mail have never made good traveling companions." He paused and a curious expression, half apprehension, half nervous elation came into the white face which showed beneath the lifted vizor of the helmet. "Thou little knowest, my friend, how much I have done for you to-night," he murmured reflectively in the same tongue. "To have gone secretly into this mad adventure were bad enough, but to have taken without leave the armor of good Captain Standish, his best matchlock and a keg of precious powder—Well, there'll surely be a day of reckoning for me if we win safely out of this ticklish business."

Scarcely a word more was spoken as Okahwis led the way through the forest. The village was deserted by all save a few squaws who had lingered behind the others to secure some cherished possession. These greeted the appearance of the steel-clad figure with shrieks of terror and fled before Okahwis could reassure them. But he knew where the warriors were to assemble, and pressed on to reach presently

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a sloping hillside, seemingly empty and deserted but where in reality each bush and inequality of the ground concealed a determined Wampanoag brave.

At the sight of that strange, gleaming shape coming toward them through the moonlight, a low gasping murmur rose from the hidden warriors. Several, terror stricken, half arose to flee. But Okahwis quickly reassured them with a low voiced explanation.

"It is one of the white gods come to aid us against the enemy," he whispered, "Where is my father, Massasoit?"

One of the warriors slipped silently away and presently the sachem appeared, amazement and a touch of dread showing beneath even his stoic calm. But when Okahwis briefly told his tale, the dread vanished giving place to sudden hope. The Narragansetts, it appeared, were gathered in the woods along the foot of the hill. The attack would probably take place at dawn, and the defenders had, therefore, a little over two hours in which to readjust their plans.

In a hurried consultation with his chiefs, Massasoit decided to risk all in a single throw and take the offensive himself. Word was swiftly passed to the assembled warriors, and an hour before the break of day the lurking Narragansetts were startled by the approach of a strange, demon-like creature.

Inhuman in that garment of shining steel, which glittered in the moonlight with a ghostly, silvery radiance, it stalked toward them down the silent, empty hillside with a slow and ominous tread. They could not know that behind it crept the invisible Wampanoag warriors, waiting only the signal for launching fierce and desperate assault.

To them it was like some monster from another world, ruthless, dominating, impervious to earthly perils, and they shivered with more than cold as they watched its slow, irresistible advance. A score of yards from the forest edge it paused, and a harsh, sepulchral voice broke the stillness of the night.

"Men of Narragansett," it was the voice of Mocha, a Wampanoag brave who knew the Narragansett tongue, crouching in the bushes behind John Sandys — "Men of Narragansett, be warned in time. Know you that I, the Moon God, seeing from on high the outrage you have planned against my friends, the Wampanoags, have come down to aid them. Depart, I command you, before I blast your band with lightning and loose the hail of deadly thunderbolts upon your heads."

The voice ceased and one mailed hand, holding a long, glittering weapon, was lifted threateningly. For a brief space the silence remained unbroken. Then a few more daring spirits yelled defiance and a score of arrows shot out of the forest, clattered against the steel helmet and breast plate, and fell, broken and harmless, to the ground.

Again that threatening steel arm was flung aloft, and a moment later a dazzling white light flamed up in front of the strange figure. For an instant it brought into sharp relief every detail of the grotesque, armor-clad shape, and illumined the forest with its rows of crouching warriors as if it had been bright day. Then came another blinding flash and yet another still, as the carefully laid trains of powder, prepared beforehand by the stealthy Okahwis, led to other little piles. And finally, amidst the blinding glares and muffled detonations, a sharp, thunderous report issued from the matchlock held by John Sandys, and the heavy load of leaden slugs tore through the bushes and played havoc amongst the horde of Indians.

Small wonder that they broke and fled

in bewildered terror before this awful creature, against whose body arrows struck harmlessly and who controlled the spirits of the air. And as they fled the Wampanoags leaping from their hiding pursued with flights of arrows and fierce, shrill yells, until at length the flight became a rout. When, hours later, the scattered remnants of that once powerful war party assembled at a distance, there was no thought of renewing the attack or even of gaining vengeance. They were but too thankful to make their way homeward, and for many years the Wampanoags dwelt in peace, protected by the legend of their supernatural guardian.

As for John Sandys, when he returned later in the morning to the Puritan settlement, elated and rejoicing at the successful outcome of that extraordinary night, he was received with angry questions and harsh chidings. But when he explained the nature of his adventure, the tune changed. The heads of the colony were quick to see the great advantage gained to their cause. They were as quick to act, also, for very shortly an alliance was negotiated with the Wampanoags by means of which the peace was kept between the Puritans and the nearby Indians for very many years.

The friendship between Okahwis and John Sandys remained unbroken. Together they hunted and fished and roamed through the great forests like brothers, and passed through many perilous adventures in each other's company. But none of these were ever quite so strange as that fantastic night when Sandys played the part of moon god and saved his friend's nation from annihilation.

World's Greatest Stamp Collection

By Kent B. Stiles

THE world's greatest stamp collection is being sold at public auction in Paris. These albums and contents are reputed to be worth $5,000,000. For many years Count Philip la Renotiere de Ferrari devoted time and money to assembling these stamps, and now they are being scattered among wealthy collectors throughout the world.

When Count Ferrari died, in 1917, in Switzerland, it was believed his will would show that he had bequeathed his collection to a public institution in either England or France. But a will, perhaps a fraudulent one, was brought to light in Switzerland, and in this document it was decreed that the collection should go to the Berlin Postal Museum. But the collection was then in Paris—and France was at war with Germany.

The Ferrari stamps were taken possession of by the French official who corresponds to the Alien Property Custodian who took over German-owned property in the United States during the war. And on June 23, last, the first of a long series of auctions was begun at a Paris hotel and some of the world's rarest stamps, several said to be worth from $10,000 to $15,000 each, were placed under the hammer. Collectors the world over will watch with interest this unprecedented sale, which may not be completed for several years.

Christmas in a Lumber Camp

By Arthur F. Rice

Secretary of The Camp Fire Club of America

Illustrated by Enos B. Comstock



IN the great forests of the North one sometimes happens on an old wood road, overgrown with bushes, barricaded with dead timber that has fallen across it, and so nearly reverted to its original wild state that only the open line of blue sky overhead reveals its existence. If the traveler has the courage to follow this dim and difficult track—the more difficult because it usually follows the low and swampy ground—he may ultimately come upon a deserted village in the heart of the forest; but it is not like the deserted village which Goldsmith describes, for here is no "cultivated farm" nor "busy mill" nor "decent church"; the scattered, one-story houses are built of massive spruce or hemlock logs and roofed with split slabs or bark. These broad, low houses are set at all angles among the stumps of the clearing and can boast of few windows and no cellars. There are neither streets, fences nor gardens; there is neither store, nor school house; and yet here, for many months, fifty, or perhaps a hundred people lived and toiled.

It is an old lumber camp, built only for winter use, and then only occupied so long as was necessary to cut and haul away the marketable timber growing in its immediate vicinity. But although intended only for this temporary use, and then suffered to go to slow ruin and decay, these buildings are put up so solidly—where logs are plentiful and boards are scarce—that they last for many years, furnishing welcome shelter for the hunters and fishermen who penetrate to these primitive localities and refuge for many of the wild creatures of the forest.

The men who for a winter seascn or two occupy such a settlement are a peculiarly picturesque type, as representative of the northern country and a great industry as are the cowboys and range riders of the West. Of all nationalities, they are alike in their robust qualities and indifference to hardship and danger. And they find plenty of both. Every day of their lives they face disaster in some form; from falling trees, rolling timber, forest fires or the hazards of river driving and the break-

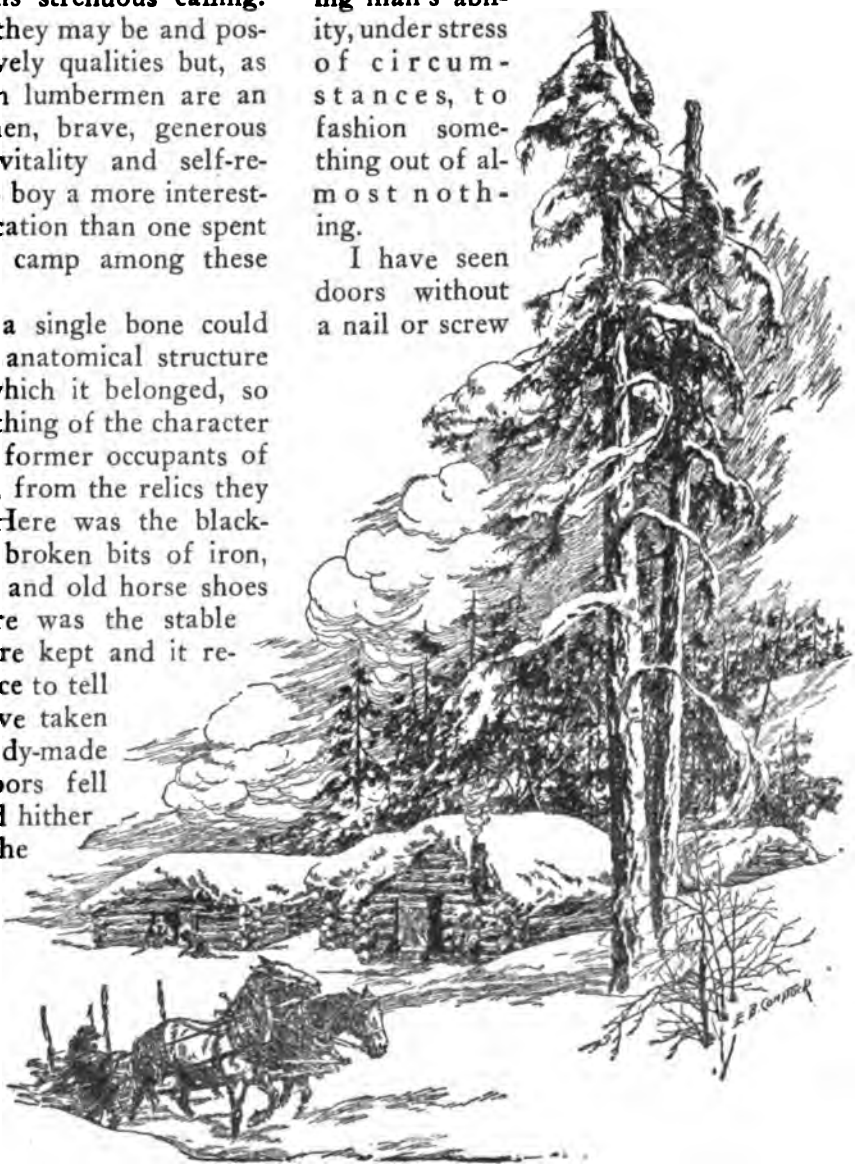
ing of log jams. The hunter or fisherman who follows the course of our Northern rivers may occasionally come upon a wooden cross set up in the edge of the forest, a mute evidence that here a man gave up his life—either drowned in the swirling rapids or crushed by the racing logs.

Lumbering is indeed a real man's work and no weakling has any place among those who follow this strenuous calling. Rough and truculent they may be and possessed of many unlovely qualities but, as a class, the Northern lumbermen are an admirable sort of men, brave, generous and of abounding vitality and self-reliance. I can wish no boy a more interesting and educating vacation than one spent in a winter logging camp among these wilderness workers.

As Cuvier, from a single bone could reproduce the entire anatomical structure of the creature to which it belonged, so one may gather something of the character and the ways of the former occupants of this old lumber camp, from the relics they have left behind. Here was the blacksmith's shop, as the broken bits of iron, ax heads, chain links and old horse shoes plainly testify. Here was the stable where the horses were kept and it requires no second glance to tell you that the deer have taken advantage of this ready-made shelter since the doors fell from their hinges, led hither first, perhaps, by the salt remaining in the horses' mangers. These smaller but more compact buildings whose chinks are filled with plaster and moss, and whose interior walls are covered with thick wrapping paper to keep out the cold, were the dwellings of the hardy woodsmen—and, occasionally, their no less hardy wives, for sometimes, although not often, the women and children accompany their husbands and fathers to the lumber camp.

Here you will find rude implements worked out with the ax and jackknife, and ingenious, labor saving contrivances, showing man's ability, under stress of circumstances, to fashion something out of almost nothing.

I have seen doors without a nail or screw



in them swinging on hinges fashioned with an ax, or on a pole pegged to one edge of the door, the projecting ends turning in holes bored in the top and bottom of the frame. The lumberman's vise and shaving table is another particularly ingenious contraption. A log is flattened for a table or bench, with four spreading legs driven into holes bored in the under side; a vertical mortise is cut through the middle of the log and into this is loosely fitted a tough, angled piece of wood shaped from a root or from part of the trunk and upgrowing branch of a small tree and a peg on which this plays is driven through the log. By pressing against the lower end of this V shaped stick the head of it bites down onto anything one desires to hold firmly or shape with a draw-shave. When a simple vise is wanted in a hurry the woodsman cuts off a sapling at the desired height and the stump is split and held open with an ax for the introduction of the article he wishes to hold. If the natural spring of the wood is not sufficient, a rope tourniquet around the top of the stump completes the job.

An old lumber camp is always alluring and the things one finds there are of absorbing interest, a broken snowshoe, a bottle of beaver bait or an empty cartridge shell hint of trips abroad in the forest when the trees were mantled with snow and the frost crystals filled the air with a sparkle of diamonds—or perchance it was after a thaw when the branches, sheathed in ice, crackled in the wind with the sound of broken glass and the trees themselves, "keyed up by the frost," snapped like pistols. Here is the leather moccasin of the French Canadian, and there the mice-eaten little shoe of one of his numerous progeny. The crude attempt at a child's toy has something pathetic in it and makes one wonder how the little people fared who were sometimes brought into these wild and inhospitable surroundings. This is the old lumber camp as you find it, occupied now only by hedgehogs, mice, squirrels and owls; but it was not always so. There was a time when it resounded with life and was perhaps the only "center of civilization" for miles around. Let us see how it was on a Christmas day some years ago, and substantially as it might be now in any other lumber camp which is "running full blast," so to speak.

The custom of observing a national holiday does not always penetrate to the remote camp, shut out from the rest of the world by four feet of snow. In fact, one day is so much like another that the day of the week and month is often lost track of. Moreover, logging is a serious business and nothing short of a furious storm is allowed to interfere with work. So the probability is that the men would turn out before light on this day as usual, each having his own particular task to perform.

The horses are to be fed, the axes must be ground, the big cross-cut saws have to be filed and breakfast must be prepared. This latter duty, however, falls to the cook, who devotes his entire time to the culinary operations. His is no light or unimportant task, for a woodman's appetite is proverbial and prodigious. Salt pork is the staple, and beans, potatoes, bread and tea the residue of the bill of fare. Coffee is not much used in the woods as tea is more stimulating and refreshing to hard working men.

Breakfast despatched, there is a hullabaloo in camp. Teams are hitched up with a vociferous mingling of Hibernian, Canadian and native strong language. The gangs of men start off for the different workings, guiding their teams among the trees and stumps, over rocks and fallen timber, and up steep hillsides

Christmas in a Lumber Camp

in a manner to make a tenderfoot open his eyes in amazement. The timber spotter has been ahead of them, going over the ground in the summer or fall and leaving the mark of his ax on every sound tree that is of the proper size for cutting and that will scale standard logs thirteen feet long and nineteen inches in diameter at the small end.

Now the sound of the ax and the rasp of the saw begin in earnest, while the frequent roar and crash of the falling trees preceded by the warning cry "Timber-r-r-r!" bear witness to the devastation that is going on. Skidways are built, upon which to pile the logs, the straight stems of the spruces, shorn of their bushy tops, are hauled alongside, and lusty men with levers and cant-hooks roll them up. If the readers of the daily papers could trace back to its origin the substance on which the printing is done, he would find that in some such way, and from some such place as I am describing, comes the wood from which the pulp and afterward the paper is made.



The character of lumbering has greatly changed within the memory of those now living. Up to 1850 the cutting was confined chiefly to the white pines, the huge and almost imperishable stumps of which may still be seen. Afterward and until about the beginning of the century the spruces constituted the bulk of the timber harvest. Now, however, the hardwoods, which make up about 65 per cent of our Northern forests, are almost as much in demand.

At noon a blast from the dinner horn sounds through the forest aisles and echoes and re-echoes from the mountains. Gangs of hungry men come streaming in from the woods, the steaming horses are baited, and the midday meal of pork and beans and tea is served, with bread and molasses and possibly pie for dessert. Speaking of baked beans, who that has eaten them in a lumber camp does not know that all others are but base imitations and somehow woefully lacking in toothsome quality! They are first parboiled in a huge kettle and then enriched with a generous quantity of salt pork, with salt, pepper and a little molasses added. Where the big outdoor fire has been burning, the brands and coals are raked away, a hole is dug and the kettle is set into this and covered with a little earth. The embers are raked back, the fire is replenished and in this fiery grave the beans are baked all night. The New York restaurateur who could serve such a product would have people from Harlem to the Battery over-running his place.

Christmas in a Lumber Camp

This being Christmas day the foreman tells the men that they had better knock off work, and that the cook and cookee—a term applied to the assistant chef—will spread themselves on a Christmas dinner, after which there will be appropriate services, of a more or less athletic nature, in the main cabin. Anything which varies the monotony of camp life is eagerly looked forward to, and the cook, knowing this, has been preparing for the occasion days in advance. The regular diet in a lumber camp is more hearty than varied or luxurious, nevertheless in the old days the forest itself was made to contribute to a feast.

Frequently there were one or two professional hunters, or camp providers, whose business it was to bring in all the wild meat they could get, and as the summer guide often becomes the winter lumberman, there was no lack of skillful riflemen in the outfit. Knowing the haunts of the deer these men, hunting on snowshoes, had little difficulty in killing large numbers of them in the secluded spots where they had "yarded" for the winter. It was not sport—it was butchery, and so long as it was allowed to continue the lumber camps were doing much to exterminate the deer. Even to-day there is undoubtedly some lawlessness of this sort, but thanks to the efficiency of the present Conservation Commission and a great change in public sentiment in these matters, the violation of the game laws is becoming much less frequent.

On such a Christmas day as I have in mind, however, there was probably a deer or two hanging in the wood shed, not to mention a string of grouse and a big pan of speckled trout taken through the ice in the nearby lake, so that the Christmas fare was to be something out of the ordinary with fish, flesh and fowl served at the repast. Sizzling frying pans and steaming pots waft odors that might tempt a man with a more dainty appetite than the lumberman possesses.

While the birds are browning in the oven with a bit of salt pork on the breast of each, and a big haunch of venison is roasting beside them, the cook devotes his attention to a big kettle which contains the most popular and savory dish of all—venison stew. All day it has been simmering on the stove and bits of potatoes, sliced onions and various seasonings have been added from time to time until now, like the witches' gruel, it is "thick and slab." In the big room where the men eat, the rough board table has been set with tin plates, iron forks, spoons and knives, and a pint tin cup for each man. Plates of bread, pans of doughnuts and big tins of gingerbread—the lumberman's sweetmeat—are ranged along the center. The cook sweeps an approving glance over these elaborate arrangements, and the triumphant blare of the tin horn announces to the very crags and peaks that the Christmas dinner is ready.

The men come filing in, and it is evident that they have decked themselves for the event. The heavy mackinaw coats and felt boots have been laid aside and each man has fished out the best clothes he could find in his meager wardrobe. If they only knew it, they look much more uncomfortable and less picturesque than in their working garments. There is not so much as a suspicion of formality at this feast, and with a clatter of benches the men draw up and make an indiscriminate attack upon the viands.

Conversation is of a very fragmentary nature until the first rage of hunger has been appeased; it is mostly of a mandatory sort and directed chiefly to the cook and his perspiring assistant. The crisp trout vanish like dew before the morning sun; the roasted grouse shrink into little piles of well-picked bones; and the "mountain

lamb," as the deer meat was always called when the law was on, becomes a rapidly dissolving view. Deeper and deeper into the big kettle of venison stew reaches the cook, until his tin dipper scrapes on the bottom. Soon the effects of such good cheer become apparent. There are long sighs of satisfaction, the pipes are lit, the jokes go round, stories are told, and songs are sung.

Finally the wreck is cleared away, the benches are shoved back, and the camp fiddler is called for. In a crowd of this sort there are usually some good clog dancers, and while the onlookers mark time by slapping their legs with their hands, one of their number steps out and executes one of the especial delights of shanty life, a very lively jig known as "moccasin on the rock," or some similar clog dance. The infection spreads and partners are taken for such contra dances as Money Musk, Virginia Reel and French Fours. A handkerchief tied around the arm indicates the lady partner. The fancy steps and the amount of physical activity injected into these dances are things which must be seen to be appreciated. The good-natured hilarity becomes uproarious, but seldom dangerous, although some very rough horseplay is indulged in.

But even shanty men will tire at last and so they begin to arrange themselves in groups on the benches, or on the floor around the great box stove whose glowing sides bid defiance to the cold outside. It is a time for stirring tales of the woods and the white water, of hunting and fishing adventures and the ways of the wild creatures of the forest. But it is also a time for talking and thinking of home and of the wives and children in the distant settlements. The spirit of Christmas penetrates even to this remote spot and the giant firs upon which the moon is shining outside the cabin are a reminder of other smaller, candle-lighted trees, around which big and little folks are gathered elsewhere. The men become confidential and speak in lower tones; half sheepishly, they exchange little gifts of pipes and jackknives.

The strings of woolen socks drying on the poles above the stove might almost suggest a long-forgotten holiday custom.

The fire burns down—the cold creeps in and the men seek their bunks and blankets; but Christmas has meant something to them and perhaps, through the stirring of old memories a few of them may hear in their dreams the jingling bells and the creak of runners as the reindeer team of Santa Claus races over the snow!

The Mink

By Carlos P. Day

Sleek little, sly little, slim little mink,
How you will run, if I move, if I wink;
If you follow your wishes
You'll catch all my fishes,
And leave not a one for my hook, so I think.

Well may I sigh at the lack of my hook,
When I observe how you search every nook,
With justified rapture
You feast on your capture
Then slip from my sight round the bend in the brook.

Hear, little, queer little, dear little mink,
You in the chain of my life forged a link,
You scoffed at my sighing,
And taught by your trying
That patience and practice will win, so I think.

Cross Country Bike Cruising

By Edwin Tarrisse

Illustrated by Frank Rigney

FOR the boy who is sensible, cross-country bicycling is one of the most profitable recreations possible. The active life outdoors in sun and wind will give him the vigor and vitality necessary to carry him through the confining work of winter. The exercise itself is general, with no excessive strain upon one muscle or set of muscles.

Although safe and without the element of competition, long-distance wheeling furnishes enough conflict with physical forces to please the most sport-loving boy. But strong as are its recommendations on the physical side, cross-country bicycle-riding offers much more. In no other way can the boy obtain such an interesting and comprehensive view of his own country. Travel by train or automobile does not provide the same close contact with the outdoors and with people at their work. Cross-country walking shares some of these advantages, but suffers because of the comparative shortness of the distances which can be covered on foot. The pedestrian cannot hope to accomplish in three days what the wheelman can do in one. The range of the cross-country bicyclist is great.

Before attempting a cross-country trip, the bicyclist should be very sure that he is in physical trim. A season of riding, including frequent trips of from ten to fifty miles, is none too great preparation. An excellent test of the wheelman's endurance is to make two trips, on consecutive days, each a quarter to a half as far again as he intends to ride in any one day of his real cross-country journey. For the boy of fifteen or so, fifty miles is a good day's average. He should never make more than eighty.



In laying out the route, remember that the actual distance traveled is sure to exceed the distances given in or found from road maps. In determining the route, pay more attention to what can be learned about prevailing winds than to hills and sand. Avoid large cities; it is generally wise to plan to spend the night in a small city or village. The daily expense, exclusive of bicycle repairs, should be a matter of consultation with one's parents.

The cyclist should plan an early start each day. Half-past six is none too early to be on the road. If all goes well, he probably will cover twenty-five miles by ten. The first five will generally be easy, the next ten very hard, and the rest of the day's run of no difficulty. In midsummer it is well to do little riding between ten and two. Then through the afternoon and perhaps into the early evening the "going will be good." It is in the early morning and late afternoon that the joy of riding will be keenest.

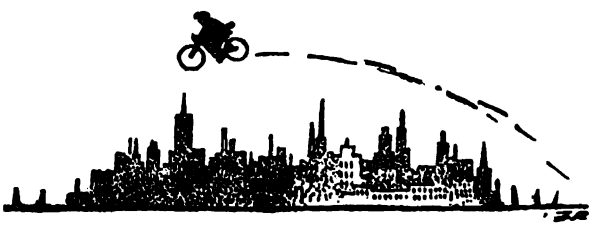
Cross Country Bike Cruising

Eat moderately and wisely, never when hot and tired, and always rest a few minutes after any meal, and at least three-quarters of an hour after the noon meal. Drink plenty of water after the day's ride is over, but little at other times. An occasional bit of lemon-juice will relieve thirst. It is the wise rider who saves his strength by walking up steep hills—over-exertion may affect the heart and may strain the delicate ligaments of the angle. Be careful in descending hills. Do not take the feet from the pedals, and have the bicycle well under control all the time. Sand or gravel must be expected at the bottom.

Although the boy who is interested in cross-country wheeling is expected to know how to ride a bicycle, he may not realize the importance of a continuous pressure on the pedals. As each pedal begins to descend, the foot comes down hard. That pushing should be continued until the other pedal has come to the top and begun to receive its pressure.

Pleasant wheeling is impossible without a good bicycle. The boy who is not large enough to use a bicycle with wheels twenty-eight inches in diameter should think seriously before attempting cross-country riding.

For the twenty-eight-inch wheel, the frame should be twenty-two inches. If the boy whose size approaches adult attempts to ride a bicycle of lower frame, he will find himself under a serious handicap. His endurance will be affected by his inability to ride with his body practically upright. Much weariness will be saved the cross-country rider if his bicycle has a spring frame.



Be careful in the selection of the crank hanger. By all means, let it be of the one-piece kind. A poor crank-hanger causes more vexation than any other faulty part, tires not excepted. Individual preference will very largely determine the choice of tires. Of course they must be of good quality. One very good plan is to start equipped with single tubes, but with a pair of butt-end inners carried in reserve, to be used when the original casing receives its first severe puncture.

To insert the inner tube, remove the tire, split for a few inches its under side, cut on the valve, and with the help of a stout cord coax the new inner tube into position. Make the hole necessary for the new valve. Close the opening in what has now become the outer tube by lacing it with a cord through holes an inch apart, punched half an inch from the slit. Cement the tire into place. It is seldom worth while on cross-country trips to attempt permanent repair of punctures in single tubes. Temporarily, a leak may be stopped by the use of electrician's tape, or plugs reinforced by tape.

Choose the saddle with as much care as you would a pair of shoes; fit is no more important in one case than in another. For hard journeys, most persons will find a hard leather one the most comfortable. Adjust it with care. Use some kind of rat-trap pedals, with roomy leather toe-clips. Adjust the clip carefully, so that the ball of the foot will rest on the pedal, and so that the foot is not held tightly enough to prevent its slipping loose in case of accident.

Use an all-steel chain; packing causes more friction than it prevents under road use. A coaster brake will save a surpris-

ingly large amount of energy. For about double the cost of an ordinary coaster brake, a two-speed brake can be purchased. By back-pedaling once, the gear is thrown out; by back-pedaling twice, a low gear is thrown in. The advantage of this for hilly country is evident. There is on the market a triple-geared brake, but for most purposes the double-geared one will be found sufficient. If, however, the double or triple-geared brake is not used, do not choose a bicycle geared above eighty-four.

Select the accessories with as much care as the bicycle itself. An acetylene light should be carried, chosen for its light weight and large carbide cup, rather than for finish or great brilliance. When riding at night over stony, unfrequented roads, the lamp may well be attached to a bracket fastened to the "head"—in other words, in front of the name-plate.

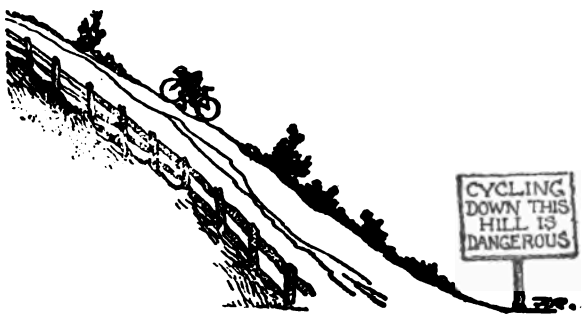
A good cyclometer is a necessity rather than a luxury. The "trip-record" kind is the most satisfactory. Into a specially made bracket attached to the other side of the front hub slip a cheap nickel watch. A timepiece is necessary, and if carried in plain view will save much bother.

Tire-bells give the most effective warning, and leave the handle bars clear, except for the string. Of course carry all necessary tools; their kind and number will be determined by the make of bicycle. A foot-pump, strapped low in the diamond, will save more bother than it will cause. Carry plenty of good lubricating oil.

If the rider expects to encounter dusty roads, he should provide himself with an extra can and a supply of kerosene for application to choked and gummed bearings. Kerosene is better than gasoline because it lubricates as well as cleans. These accessories, together with toothbrush and small comb, but wrapped securely in oiled silk, can be carried in two ordinary toolbags strapped to the frame.

The cyclist should wear light woolen underwear, knickerbockers, medium-weight woolen stockings, bicycle shoes, a jersey, and a light cap with a broad vizor. Strapped to his back, or carefully tied behind the saddle, he should carry a skeleton coat, in which is wrapped a change of underclothing and stockings, pajamas and clean handkerchiefs. Everything that the rider carries in his pockets should be wrapped in oiled silk. No further baggage is necessary if the cyclist does not stay overnight in large cities.

Only to the sensible boy does cross-country bicycling offer anything. To the rider who is physically unprepared, or who will not refuse to overdo, this sport will work a positive injury. In any case, before starting, the boy should have considered the project thoroughly, and should be guided by the advice of experienced bicyclists.



Wallie Scores a Bull's-eye

By Frank Farrington

Illustrated by Bert N. Salg

WALLIE WALDO had a dandy "twenty-two" rifle given him as a birthday present and he had grown tired of shooting at a target in the back yard. Even popping at bottles thrown into the river had lost its novelty. The hunting season was just opening and all the sportsmen were talking of quail and pheasants and rabbits and squirrels, and one man said he had heard that a wildcat had been seen over on Bagby Hill back of the village.

Rabbits and squirrels interested Wallie only mildly, but the wildcat talk appealed to him strongly. A wildcat sounded worth while. He stopped in at the drug store where his chum, Pembroke Wilson, nicknamed "Porky," worked as errand boy and bottle washer. Pembroke was working in the cellar.



His shot took effect

"Want to go hunting, Porky?" asked Wallie, going down the cellar stairs.

"Yes, sure I want to go hunting," said Pembroke, "but, say, I got to be on the job here. I only get one afternoon off a week. I might go then, but not till next week."

"I know where there's a wildcat and we can go and get it, I'll bet," said Wallie. "It's over on Bagby Hill and I think I heard it barking last night. I heard an awful wild noise over that way."

"Barking! Say you're thinking of a dog. That wasn't a wildcat, it was a tame dog. Where'd you hear it?"

"You know that day we went up there ches'nutting? It must 'a been 'way up that old log road that goes over the end of the hill."

"Yes, I know," assented Pembroke, try-

ing to stick his little finger into the neck of a bottle to get out a straw. "I s'pose you could see that ol' wildcat from the roof of your barn and see him going up that road on the hill in the woods?"

Wallie paid no attention to the doubt expressed in his chum's remark. "I didn't say I saw him, but it sounded to me like he was just about up there by that big rock where we ate our lunch that day. I'll bet he has a hole under that rock or around there. Want to go up next week your day off and see if we can get him?"

"I don't believe the's any wildcat there," Pembroke doubted.

"Now listen, Porky!" Wallie expostulated, "You know old Jeff Jones?"

"Fellow 't goes trapping in the winter?"



Pembroke stepped on a branch that would not hold his weight

"Yes, he says he saw a fellow who came over Bagby Hill last week and this fellow told him, told Jeff, he saw a wildcat on top of the hill. Ain't that getting it pretty straight? And Jeff says this fellow knows a wildcat, too, when he sees one, because he's shot 'em by the dozen. I asked Jeff specially about it."

"Well," said Pembroke, "I haven't got any gun, but I'll go with you. I'll take my slingshot. I might see a chipmunk, and that's as near as we'll prob'ly come to seeing a wildcat. I wouldn't want to have to fight a wildcat with a slingshot though."

So it was arranged that they would start the next Wednesday, as early as Pembroke could get away from the store.

"Wildcat," said Pembroke to himself after Wallie had gone. "Wildcat!" he ejaculated again, as he gave a bottle a vigorous shake. "Didn't I hear my father say there hadn't been any game bigger'n a rabbit on these hills in forty years? And now Wallie thinks the's a wildcat. There ain't a wildcat in a million miles of here."

So Pembroke went on washing bottles and looking around the drug store cellar at the accumulated odds and ends of advertising devices used in the windows for display, and signs and dummy packages representing various goods, and as he worked he thought about the wildcat hunt.

His thoughts must have been pleasant because he finished the work with a grin on his face, and it lasted as he went upstairs and gathered together some parcels to be delivered around town.

On his way up the street he met Bunt Ticknor. "Come on along with me, Bunt," said Pembroke. "Got something to tell you."

It must have been something secret because the story was told in a low tone and even when the two met Billy Rogers and let him into the secret, there was no hint of it could have escaped to the ears of anyone a yard away.

Loud bursts of laughter punctuated the telling and they slapped one another and yelled with delight, and when the three parted back at the door of the drug store, it was with a "Remember, Billy!" "Remember, Bunt, keep it dark!" "Say, Porky, some stunt! See you later!"

When Wallie strayed over to the Wilson's on Sunday afternoon to make his regular call on Pembroke and talk over the plan for Wednesday, Pembroke was not there. "Went away right after dinner with Bunt and Billy," said his father. "Better sit down and wait. They'll be back."

But Wallie was a little hurt and he declined to stay. Pembroke had not failed in all summer to keep his Sunday afternoon date, though there was never any promise about it. Wallie went home to sulk by himself, determined at first not to take Pembroke hunting with him, and then deciding that at any rate he wouldn't let him shoot his rifle. The indignation however tapered down until, when Pembroke came sauntering over just at dark, Wallie yelled in welcome, "Hi, Porky, looky here! I got a picture of a wildcat."

Pembroke took the picture with the air of an expert and burst into a loud guffaw as he looked it over.

"What you laughin' at?" demanded Wallie.

"That ain't a wildcat," said Pembroke. "That's a bobcat. Some folks call 'em wildcats, but it ain't got a long tail like a wildcat. If we find a wildcat on Bagby Hill, I'll bet you won't find him anything like that picture. I don't care if it does say 'Wildcat' under it. It's out of a magazine anyway, ain't it? What does a magazine know about what's up here on Bagby Hill?"

Pembroke's apparent acceptance of the Bagby Hill wildcat mollified Wallie to such an extent that he forgave the attack on the picture and they fell to talking of the chances of finding the animal on Wednesday, and telling what they would do to it if they did find it.

Wednesday was a dull, misty kind of day with the clouds hanging low and the boys were worried all the forenoon over the possibility of rain keeping them at home.

Bunt Ticknor and Bill Rogers were standing in front of the post office when Wallie went there for the mail.

"Where you goin' 'safternoon?" asked Bunt with a grin. "Yes," said Billy, "whatcha goin' to do to-day? Goin' out with the ol' trusty rifle to get a little wildcat meat for the family?"

This was just the sort of "kidding" Wallie would have met with replies in kind at another time, but somehow at this time it irritated him and he only said, "Aw, what's it to you anyway?" and went on, wishing Porky had kept it to himself that they were going hunting. "What's he want to let those boobs in on it for? Now I s'pose they'll want to come tagging along, and you can't get any game when a whole mob goes hunting together—and only one gun."

This grouch wore off, however, and when he and Pembroke started out after dinner with none of the other boys "tagging along," he was perfectly happy.

It was a half hour's walk to the edge of the woods on Bagby Hill and it was

there that the two boys sat down and discussed the best way to hunt a wildcat.

Wallie was quite sure they ought not to follow the road but should steal through the underbrush on each side of it, but Pembroke declared stoutly that he had read in a book on wildcat shooting that the best way was to keep in the open as much as possible so you could see some distance ahead and so you could see what you were shooting at. Pembroke's plan was adopted and the two boys walked slowly up the old log road, watching closely for any sign of motion in the dull light of the misty afternoon.

"What kind of a noise did you say you heard that o' wildcat make the other night?" asked Pembroke as they halted to get their breath after an exceptionally steep pitch. Wallie had described the noise a dozen times, but Pembroke seemed to like to hear about it.

"It sounded a good deal like a bark, only 'twasn't a bark, and it sounded a good deal like a big cat miaowing, only it wasn't a cat's miaow," said Wallie. "I can't just describe it, but if I heard it again, I'd know it all right. What was that!"

They both jumped as there was a sudden rustling in the leaves at the side of the road. Nothing was visible however and a scratching of claws on the bark indicated the presence of a gray squirrel going up the farther side of a big tree.

The boys stopped and watched for the squirrel to appear in the treetop, but all they could see was his tail blowing out from behind a branch. "Shall I shoot at him?" asked Wallie.

"No, you can't see him. Let me give him one with my sling-shot," and Pembroke sent a buckshot up into the tree without disturbing the squirrel. "If he'd stick his head out, I could bean him all right," said the boy.

"I'll bet I could take his tail off with my rifle," said Wallie, "but I'm afraid if we go to shooting here, we'll scare the wildcat."

"Let's go on," said Pembroke. "I thought I heard a noise up the hill there." They climbed the steep road, at one moment stealthy, at another crashing through some dead branches with as much noise as an elephant going through a cane-brake, but all the time "hunting" with both eyes.

A dead tree had fallen across the road at one point and in trying to get through it Pembroke stepped on a branch that would not hold his weight, though it had just held up Wallie, and it broke, letting the former down on his back in the brush with a tremendous crash. Just as he struck they heard a cry that sounded like a combination of a dog's bark and a cat's miaow, and Wallie shrank back into the brush, and put his rifle to his shoulder, looking forward, with his eyes starting out of his head.

"That was it!" he exclaimed. "That was the same noise I heard the other night. That's the wildcat. Let's hurry! I'll bet he's right there at the top of the hill where he can watch both ways. Hurry, Porky! Come on or he'll get away."

Pembroke climbed out of the brush, exclaiming, as he rubbed his elbow, "Jinks, that was some fall! Got your old gun all fixed?"

"Yes, sir, I've got my trusty rifle ready," said Wallie. "Just show me the game!"

"Don't you feel kind o' shaky?"

"Nope, not a shake. I'd like to see that wildcat right now—say, what's that?" Wallie dropped to one knee and looked ahead up the path.

"I don't see anything," said Pembroke. "What's the matter. You gettin' dippy?"

"Look, Porky, right there where that big rock sticks out over the path! That's where we ate our lunch that day. It's

right where the path begins to go down the other side of the hill."

"I didn't think we'd got so far up," said Pembroke, "but I don't see anything. I guess you see a leaf or a stick."

"Don't you see that head there, sticking out from behind that rock," Wallie whispered huskily in excitement. "See there! Gee! Wait till I get my rifle cocked! I'll give him one of these old twenty-two longs."

"Wait, don't shoot till you're sure what you see!" exclaimed Pembroke. "Didn't you see that sign in the post office, telling hunters to be sure what they shoot at before they shoot?"

"I know what this is. It's got a head just like the wildcat in the pictures—same color'n everything. I see it sticking out there and I'm going to shoot or it'll get away." He put up his rifle and looked along the barrel.

"You can't hit it," scoffed Pembroke. "You're too far away. Your gun won't shoot that far. It's nothing but a stick you see anyway."

"You don't know my trusty rifle," said Wallie. "It'll carry there all right. See that head now?"

"Gee, that's right," admitted Pembroke. "What if you miss him and he comes at us?"

Pembroke dropped back a step and Wallie took aim and fired at the head he saw. The target dropped from sight.

"Whoop! Got him," yelled Wallie and started up the hill.

Just then there came a yell from just behind and two other boys, Bunt Ticknor and Billy Rogers, burst from the bushes into the path with a loud cry of "Yay! He's got the old wildcat! Let's go skin him and take his meat home to the squaws!"

Wallie scrambled on up the steep path reloading his rifle. "Laugh, you fellows, if you want to. Maybe you think I didn't see anything. What you sneaking along in the bushes behind us for anyway?"

With noisy cries they reached the rock and Wallie went behind it, Billie and Porky and Bunt shouting, "Yay! Wildcat! Wildcat! Wild rat, you mean. Look him over Wallie!"

For an instant Wallie was speechless for there in the leaves before him, where the rifle shot had knocked him from the rock, lay the papier maché rat he had seen dozens of times in the drug store window where it advertised a rat poison.

But before he could speak his wrath, there was a sound of a heavy thud, as of an animal landing on the ground from a tree and they all turned in the direction of the sound and, snarling at the foot of a low limbed beech, apparently hesitating whether to attack or run, crouched a dark rough-haired beast. Without an instant's hesitation, as the other boys shrank back against the rock, Wallie put up his rifle and shot again, this time at a real wildcat. It was not such a shot as potting floating bottles, bobbing on the current of the river. The target was motionless for the moment, but it would not be surprising to know that Wallie himself could not point his rifle steadily at any such a target, unexpectedly presenting itself in the dull light of the woods. Perhaps the very unexpectedness of the situation gave Wallie no time to get excited. At all events his shot took effect. He must have, by good fortune or excellent aim, held his rifle steady and true, for he killed the beast with a bull's-eye, or rather a wildcat's eye, shot.

All four of the boys hesitated, though Wallie was reloading again. They waited to see that the wildcat was indeed dead. Then they approached cautiously and Wallie, urged by the rest, held his rifle to the animal's ear and shot once more to make sure. And there was such an outbreak

of rejoicing as the woods had never known.

Without waiting long, each boy took a foot and thus they carried the wildcat, with many rests for discussion, while they detailed the joke they had played on Wallie, bringing the papier maché rat up on Sunday and hiding it right where Pembroke was to lead him up in full view of its head projecting from behind the rock.

All Wallie's wrath at the jokers was forgotten and all thought of kidding Wallie any longer about his wildcat was buried in the glamor that surrounded the hunter whose prophecy had been vindicated and whose prowess was thus established in the eyes of the whole village as well as in the eyes of his companions, for not every day do four boys like Wallie and Billy and Bunt and Porky parade up Main street carrying a wild cat between them by its four feet, with only a twenty-two rifle and a sling-shot as armament for the crowd.





On Nature's Trail

The Bird Dentist

By Gene Stone

MANY hundreds of years ago the ancient historian Herodotus traveled through the land of Egypt and wrote about a queer bird he saw there that acted as a dentist to the crocodile.

He tells us that the crocodile lives chiefly in the river and that the inside of his mouth is infested with a kind of worm called the leach. When the crocodile basks on the sand, he opens his great mouth toward the western breeze and a little bird takes this opportunity to hop into it and pick his teeth and jaws of these unpleasant intruders. The old writer adds that the crocodile is so pleased and helped by this attention on the part of the bird that he takes great care not to hurt it.

This story was told over and over for centuries. One writer would tell it one way and another would recount a different version of it.

People in olden times believed it unquestioningly, but the modern person is much more critical and so it began to be doubted and even laughed at as a sort of fable that a bird should actually be allowed to enter the jaws of the monster of the River Nile and get out alive. It seemed too absurd to be true for it was known that the crocodile was very greedy for birds and if he could find one that had been hurt and could not get away he would make short work of eating it. Even a full grown vulture had been found in a dead crocodile's stomach. So the story was discredited.

Another old chronicler who related this odd tale of the crocodile-bird said that when the little creature was cleaning the crocodile's teeth the monster would go to sleep, when the industrious little dentist would remind him to open his jaws by piercing the roof of his mouth with "a prickle which groweth on the bird's head." Then the crocodile would open his cavernous jaws again and Doctor Bird could get out. This addition to the old tale only increased the doubtfulness of it, for what was supposed to be the prickle on the head of the bird known as the crocodile-bird was found to be only a little crest of feathers.

A man named Mr. John M. Cook has really set the matter at rest. He tells us that while traveling on the Nile, he and his brother saw a number of large crocodiles and crocodile-birds on a sand bank and decided to watch them to see if there was really any truth in the old story. The two men were very careful to conceal themselves in a pit at daybreak where they

could see the sand bank. About noon two crocodiles went out upon it to sun themselves, when several birds began to flit near and about them. Mr. Cook and his brother watched them through opera glasses and saw one of the birds go straight up to a crocodile. The great creature at once opened its mouth, the bird hopped in and the crocodile closed it again. One would suppose that was the end of the venturesome litttle bird. But it was not. In a few moments, Mr. Cook says, the ugly jaws opened again and out came the bird, which hurried down to the water's edge. What it did there could not be made out, but, having finished, it went back to the crocodile, entered its mouth, was shut in again, came triumphantly out and hastened once more to the water. Three times they saw the bird do this.

Mr. Cook shot two of these birds which he tells us are the spur-winged plover. They are grayish, about the size of a small pigeon, and provided with a sharp spur upon the wrist-joint of the wing. It is probably this weapon, used by the feathered dentist as a more or less gentle reminder, that causes the crocodile to reopen his enormous mouth and let his busy little friend depart.

The Tarantula

By Kate Randle Menefee

Laughable reports about the Texas tarantula have been circulated since the soldiers camped in the Lone Star state. No doubt when any one of them came face to face with this enormous spider for the first time they did indeed experience quivers of horror. I have never known of any one being bitten by them, however, and naturalists declare that while their bite is painful it is not dangerous.

When I was a child one of our favorite walks was down what was known to the villagers as "The Bridge Road." Here we might encounter many members of the tarantula family slowly crossing the sandy road moving in the direction of the river. I imagined then that they were going down to the brink of the stream for their evening drink as did our friendly cows. I suspect, however, that it was their hour of emerging to seek their prey. I have read nature articles in which the writer stated that they only emerged at night. This may be their favorite hour, I cannot say, never having seen them at night, but I do know that they come out frequently from five to six o'clock in the afternoon and I have seen them as early as three.

They have no fondness for civilization and I have never heard of one being found in a house as are its relatives, the ordinary web-spinning spider. They are said to line their ground homes with webs.

The species found in southern Europe and along the Mediterranean shores must differ from ours in the Gulf states. These are said not to exceed three-fourths of an inch in length and I have seen them here as large as a medium-size saucer. Also, I notice that they are pictured as elongated spiders while our native ones are more inclined to be round. The Texas species are black covered with very brown or black hairs. They are of a soft rich velvety appearance.

I have often peered down into their holes in the ground and seen them watching just safely within. I have never known of their attacking anything for a battle except the tarantula killer. This enemy of

theirs resembles a red wasp only being almost three times as large as the common species. You will notice one flying about above the top of the weeds and grasses much as a butterfly does. Then suddenly he will dart to the ground. In all probability he has located a tarantula or his hole. The tarantula sometimes puts up a battle but he is usually paralyzed with the tarantula killer's sting. Sometimes the tarantula killer will dart to the ground a number of times and then fly off as though waiting for something and you wonder if the tarantula put up the better fight or if he escaped. Later on, however, nine chances to one, you will see the tarantula killer dragging away his prey and you wonder how he will manage to arrive safely with such a large burden.

The tarantula killer deposits the tarantula in its nest where it serves as a depository for its eggs.

The tarantula is said to have derived its name from the town, Taranto, in Italy, where this species of spider is said to be especially common.

The graceful dance of Southern Italy called the tarantella is the only relic of the tarantism which in early days was supposed to have been produced by the bite of the tarantula.

This was a dancing mania, nothing more or less, and the world eventually learned that its real cause was to be found in the epidemic then sweeping the country of an exaggerated hysterical condition and not from madness and depression distributed into the system by the tarantula's poison.

People of the Ostrich*

By N. Tourneur

Many are the strange and interesting native tribes that are found in the Americas. Among the most interesting are the people of the ostrich, who inhabit an almost as yet unknown country, and in language, and character, and race, are altogether distinct from other Indians. They live in the remote and almost legendary regions of the "land of large-feeted men." A land, that like Chili, Peru, Mexico, and northwest South America, has its story of the existence of a hidden city among the unexplored wilds of their Cordilleras.

The Tehuelches of Patagonia, that vast peninsular end of South America, are scattered across it, from the Straits of Magellan to the Rio Negro—a territory of over 1,000 miles in length and 300 at its narrowest. A brave, active, athletic people, wonderful horsemen, singularly expert with their weapons and implements, who lead a wandering life, and hunt the wild cattle, the guanacos—and ostriches. For Patagonia is a home of that splendid bird, which was there ages before men crossed its path in the faraway wilds of the interior. To the Tehuelches, this fine bird is as important in their existence as the guanaco, for they are a race of hunters, and grow but little food for themselves.

There is not an encampment more picturesque than one of these nomads of New Chili, as the Chilians call their southern territory. Notwithstanding the Patagonian winter is rough and cold, with heavy rains, the Tehuelches prefer to remain in their toldos or skin tents that are like a half-hoop in shape. They group their toldos around that of the head tribesman, together with their innumerable dogs

*Ostrich Hunters of Patagonia

and fowls and horses; and as quickly strike camp as pitch it.

At a word from the chief, there is bustle everywhere. The young men and boys lasso and bring up the horses, and the women, who are well treated, place on their backs the bolsters of reeds tied with hide thongs, and the skin ponchos and blankets, forming the saddles. Others strap their belts on, get pots and pans, etc., together, or put their babies into wicker-work cradles; some of them rolling up the skins forming the covering of the toldos, and tying them and the tent poles on the baggage horses. Meantime, the men collect their herds of horses, and fill the water-skins which are carried on the march. The women mount astride of their bolster saddles, their babies and pet dogs are hoisted up behind; then they take their baggage horses in tow, and set off in single file; the men driving the spare horses.

For weeks they will remain on the march across the vast plains, with their lagoons and miles of 8-feet reeds—their bare, rugged basaltic hills and huge ridge-and-furrowlike folds of ground between which grow thick forests. Oddly enough, it is on the immense plain at the south-eastern foot of the Cordillera de los Andes that wild horses or mustangs are easiest found, and the guanaco abounds. Hither the Tehuelches travel for the hunting. The guanaco is of use to the Indians in every way. The flesh of it is excellent eating, and made into a kind of pemmican that is eaten when the tribe is on the march; the skin is used for clothes, and for the toldos; the sinews serve as thread; the skin of the neck furnishes thongs for bolas and bridles; the skin of the hough supplies them with a kind of moccasin shoe; and from the bones they cut spoons, cups, dice, and make their favorite instrument.

But it is the ostrich these inland Patagonians prize more highly. The Patagonian species is smaller and lighter in color than others; is exceeding swift on foot, and runs with its wings closed, while the other species invariably spread theirs. It squats so close, and its plumage so closely resembles the general hue of the plains, that often it can escape its pursuers. Together with its great speed of flight, the Patagonian rhea or ostrich has eye-sight nigh equal to that of the eagle, and though not web-footed can swim a river or lagoon with ease. The Tehuelches prefer to kill it in the winter season, when, by encircling a herd, they force the birds to take to a river, where, their legs getting numbed with cold, they are easily captured on drifting to the shore in the current. The glare of the white snow also appears to affect their eyes, and their saturated plumage becomes heavier, making the beautiful birds easier prey for the hunters. These Patagonians look upon the ostrich as the North American Indian once did upon the buffalo; and also to a profitable end, for the wing feathers bring three dollars a pound in Buenos Aires, and the few white prospectors and settlers make many a good deal. The Tehuelches use the skin of the bird's neck as a pouch for salt, tobacco, and other things; the leg sinews for thongs; the fat from the breast and back is carefully melted and put into bags made of the skin; the eggs are used for food; and the flesh is more nourishing than that of any other creature. The Tehuelche thinks that the beef of the wild cattle which he kills—and among the mountains they are numerous—is poor, hard eating compared with roasted ostrich or guanaco. He puts more value on the hide and horns of the wild cattle, for these he puts to many uses.

No tribe in the Americas are better looking than these inland Patagonians, and few better conduct themselves. The

women are wonderfully industrious, and beautifully broider and ornament the dressed skins used for clothing, and though forced to work hard are not ill-treated by the men. Nor is a woman compelled to marry a man she does not like. The only ceremony of marriage is an exchange of gifts between the two toldos. The men have long flowing hair, not so coarse as that of the North American Indian, of which they take great care, making their wives brush it out once a day at least; and like the women they are very cleanly.

On the death of a Tehuelche, all his horses, dogs, and other animals are killed. His ponchos, ornaments, bolas, and other personal belongings are placed in a heap, and burned, the widow and other folk keeping up a dismal wailing. They all believe in a Good Spirit that watches and helps, but have no idols or objects of worship. Oddly enough, they have very few traditions. One, to which they cling, is that farther north there exists a tribe of white people, who have much gold, and live in the caves of the mountains. A most interesting American race—the Tehuelche Indians.

Fireflies

By Dr. Edward F. Bigelow

SEVERAL scientists have been conducting experiments with the familiar firefly, or "lightning bug," but without discovering the secret of its lighting apparatus. The familiar flash we see on summer evenings is probably the most efficient light known in nature. The flash of an able bodied firefly is just 1/400 as bright as a candle, while the glow is much weaker, or about 1/50,000 of a candle power. The strength of the light is very deceptive; most of us would judge it to be much brighter. Considering the apparatus the firefly has for producing its light, however, it has really marvelous power. To supply an equal amount of light in the laboratory would require a temperature of 2,000 degrees Fahrenheit, while the firefly generates no heat that can be measured.

In spite of all experiments no scientist has discovered how the firefly turns its peculiar illumination on and off. The materials it works with are probably moisture, oxygen, and some unknown substance, possibly some kind of fat. The firefly continues to keep its secret, although it has been watched beneath the most powerful microscopes as it operates its tiny battery. All the scientists can tell us about it is that the light is some form of oxidaion, and it is hoped that by studying the firefly we may discover some startling new method of producing light which may revolutionize our great gas works and electric power plants.

Ups and Downs of Cooking

By Belmore Browne

Artist, Author, Explorer—the first White Man to Climb Mt. McKinley

MANY years ago, when I was about ten years old, a broken axle on a "grub wagon" introduced to me the age-old problem of the survival of the fittest, and then and there I discovered that, nine times out of ten, the problem is one of food and drink.

There were five other boys in the party, ranging from eleven to sixteen years, and one full grown cow-puncher. The axle on our wagon broke in a ford of the Natches River in the heart of the Cascade Mountains of Washington, and four hours later I dolefully watched the cowboy ride away to the lowlands with the broken axle balanced across his saddle. Now it wasn't the thought of being left alone that made me doleful, for I was an optimistic youngster, it was the memory of the cowboy's crisp bacon, steaming oatmeal and golden-brown bannocks cooked to perfection over a well regulated camp fire.

None of us had ever had the experience of shifting for ourselves, and the older boys were just the age to want to run things in their own way. Their attitude towards food was expressed by a rough and ready Scotch boy. "Any feller can cook grub," he said scornfully. "You just wait until supper time comes and I'll show you!"



When supper time came he 'showed us" and after the howls had quieted down the other older boys tried their hand with results that were horrible to contemplate. The food that didn't get burned was half-cooked, and what wasn't half-cooked was filled with sand and sticks, for we had chosen the worst of camping spots—a sand-pit, and every breeze that blew raised a regular dust-cloud. A large part of what we cooked fell into the fire, for during the daytime we were too busy fishing for trout or swimming in the river, and when darkness fell we had to get along with the rotten sticks that we could pick up near camp with the result that our fire was always falling to pieces and carrying our pots and pans with it.

A week later when our cowboy rode grinning into camp with the welded axle

he was met by a sadder and wiser crowd of boys, and as he good-naturedly began his preparations for the evening meal six pairs of young eyes intently followed his every movement. During the delicious supper that followed not a word was spoken, we were too busy eating and—*thinking!* That was my first lesson in camp cooking and it has stuck in my memory to this day, and the most important part of the lesson is this: be neat, clean, and systematic in the preparation of your food, but first and last—*build a good fire.*

Fire building is the most important part of outdoor cooking, and no one can learn to build fires by reading a book. I have seen many diagrams of different types of fires and read endless articles about the proper method of making fires, but my experience has convinced me that there is but one good fire—the simple, everyday fire built of long pieces of wood, and raised from the ground by firedogs of green wood. This is the identical fire that burns on the hearths of American homes, with the two slight differences that the outdoor fire is built of longer logs so that several pots can be suspended over the flames, and firedogs of green wood are substituted for those of iron. On rare occasions when it is necessary to roast meat, a higher fire is preferable, but from the swamps of Florida to the Alaskan "tundra" the "long" fire is the standard.

After my experience on the Natches River I graduated to a sheet-iron camp stove. Most of my trips were in the Cascade mountains, and packhorses made transportation an easy matter. Cooking on a camp stove was the last word in simplicity and I vowed that I would never again go into the mountains without one. In a few years, however, good fortune took me to Alaska, and it was during the years of primitive living that followed that I learned to look on the camp fire as the outdoor man's best friend. I learned a second lesson too, for I discovered that one of the greatest joys of the outdoor life was the satisfaction that comes from profiting by one's own mistakes, and ever since those early days I have sympathized with the man, or scout, who prefers to learn by going out under the open sky and doing things, rather than by studying a book. My advice to every scout is: Go out and learn; build your fires all wrong and cook your food any way, for it is through making mistakes that we gain experience and happiness. It is the trips where things went wrong that we never forget, for such trips have the spice of adventure, and it is the spice of adventure that makes life worth while. What is true of camping is true in a limited way, of camp cooking, for I have found that even the most expert frontiersman can, on occasion, forget all his learning and bungle things up in the most deplorably hopeless tenderfoot fashion.

There is an old wilderness rule that must date back to the days of the cave man, to the effect that no man must ever place on a cooking fire any projecting piece of wood that may be accidentally kicked or stepped on. There is no denying this rule: it is based on the hardest of common sense, and yet every man who has ever lived in the open has had to learn it by bitter experience. My lesson was particularly bitter. Four of us, three white men and one Indian, were camped in the very highest grove of timber on a great snow-covered mountain on the Yukon headwaters. We were making the first collection of that magnificent animal, the Osborne caribou. By good fortune we had killed several splendid specimens some ten miles from camp. Starting before sunrise the following morning we began the difficult task of measuring, skinning and transport-

ing the animals to camp. It was one of those days when everything goes wrong. First a blizzard came howling down from the north and for more than twenty hours we worked in blinding clouds of sleet and snow, then our packhorses bolted and were only recovered after a five-mile chase down wind, and when we finally found our camp in the inky darkness our supplies and firewood were buried deep in snow. We were all close to exhaustion and making camp and cooking a meal under these conditions takes a lot out of the best-natured man. In the darkness it was difficult to find firewood and chop it, and we had thrown a long, dry balsam log on the fire. Now we all knew that we were doing wrong, but we had been driven to recklessness by our hardships.

Our meal was to consist of warmed-up beans, rice and tea, and in our half-famished condition it seemed as if the thing would never boil.

Driven to desperation we broke a second wilderness law by removing the pots from the hooks and placing them on the burning logs. Under the increased heat they soon began to sizzle, and just as the meal was ready and the tea made, I tripped over the projecting log and upset our entire supper into the fire. I will draw a veil over the rest of that sad experience, but I will add that one lesson of this kind is worth more than all the second-hand advice in the world.

Cooking Fires

The moment a man turns his back on civilization the preparation of his food becomes primitive, and anything that is primitive is done in a simple way. But right at the start I want to warn my scout reader that it is through this very simplicity that most men fail. The chopping down of a tree is a simple matter, but the man who thoroughly understands an ax and its use, must spend many a long year in the forest.

The preparation of a good cooking fire is a simple matter but it must be done with infinite care and with a knowledge that can only be acquired by experience. I do not wish to suggest, however, that the gathering of this experience is a serious affair, for one of the most enjoyable wilderness meals that I can remember was one where the cooking was accomplished with a shameful lack of system. There were seven of us in the party, four white men and three Aleutes. We had been in the heart of the Kenai Mountains for many weeks, and during that entire time we had not cooked a meal that was not a model of wilderness perfection. On the return to the sea we were weighted down with heavy loads and on the evening that we reached salt water we had gone without eating since early morning. As we were crossing a marsh one of the Indians gave an excited grunt and following his eyes we saw a large flock of mallard ducks sunning themselves on a muddy island. Now we were all half-famished and we knew without being told that the mallards were in the "flapper" stage and could not fly, so with one accord we dropped our packs and rushed forward. The scene that followed must have been ludicrous in the extreme for the ducks could run and dodge with ease on the soft mud, whereas we slipped and floundered about with every step. In a few moments we were black with mud from head to foot, but our happiness was complete as we returned to our packs with a generous supply of game.

The question then arose as to whether we should hunt up a good camping spot or stop where we were. Our hunger won over our better judgment, however, for we stopped on a swampy island, and without waiting even to pluck the birds prop-

erly we spitted them on such sticks as the island afforded and roasted them over a smoky fire. When we were not eating we were laughing, for we all resembled the little boy who said that he "didn't like pumpkin pie because it mussed up his ears," only in our case it was roast duck instead of pie. From the outdoor writer's point of view this meal was a disgraceful affair, but the fact remains that it was one of the most enjoyable that I have ever eaten.

One of the commonest mistakes made by campers is that of carrying too great a variety of foods. Remember that hunger is the best sauce in the world and that one wholesome dish well cooked and eaten outdoors will be far more healthful and taste far better than the most elaborate meal eaten in a badly ventilated restaurant. The ease with which a man can live in the open is illustrated by a "timber-cruiser" in the Olympic Mountains, who regularly went into the forest with a food outfit consisting of oatmeal and salt. A frying pan answered for a cooking utensil and plate, and fish and small game rounded out his simple bill of fare. Our forefathers followed practically the same plan, but they substituted parched corn for oatmeal. My reader must not gather from these Spartan examples that life in the open must be one of hunger and self-denial. When a man is working hard he needs good food and plenty of it, but the food standard in civilization is far too large and "enough is as good as a feast."

Another common mistake in camp cooking is the placing of pots on the fire. Common sense teaches us that no fire is safe, and we should admit the rule that no cooking utensil except a frying pan, which needs constant attention, should be placed on the fire.

There is no doubt that much of the cooking done out of doors is badly done, and perhaps one of the worst habits among campers is that of eating fried food. Practically every case of indigestion that I have encountered in the wilderness was due to too much grease, that is, fried food. The strange part of the frying habit is that most of those who fry food do so because they believe it to be the easiest cooking method. I will admit that it is the quickest but no method of cooking is more simple than boiling or roasting providing *you know how.* Given the proper tools, there are only two things to be remembered when boiling food: use a large pot with plenty of water, and do not let the fire burn too high. Learn to eat boiled food when you are camping. Nothing in the world tastes better after a long, hard day in the open than a big plate of steaming fish chowder, or a rich stew, and, what is more important, it is as healthful as it is good.

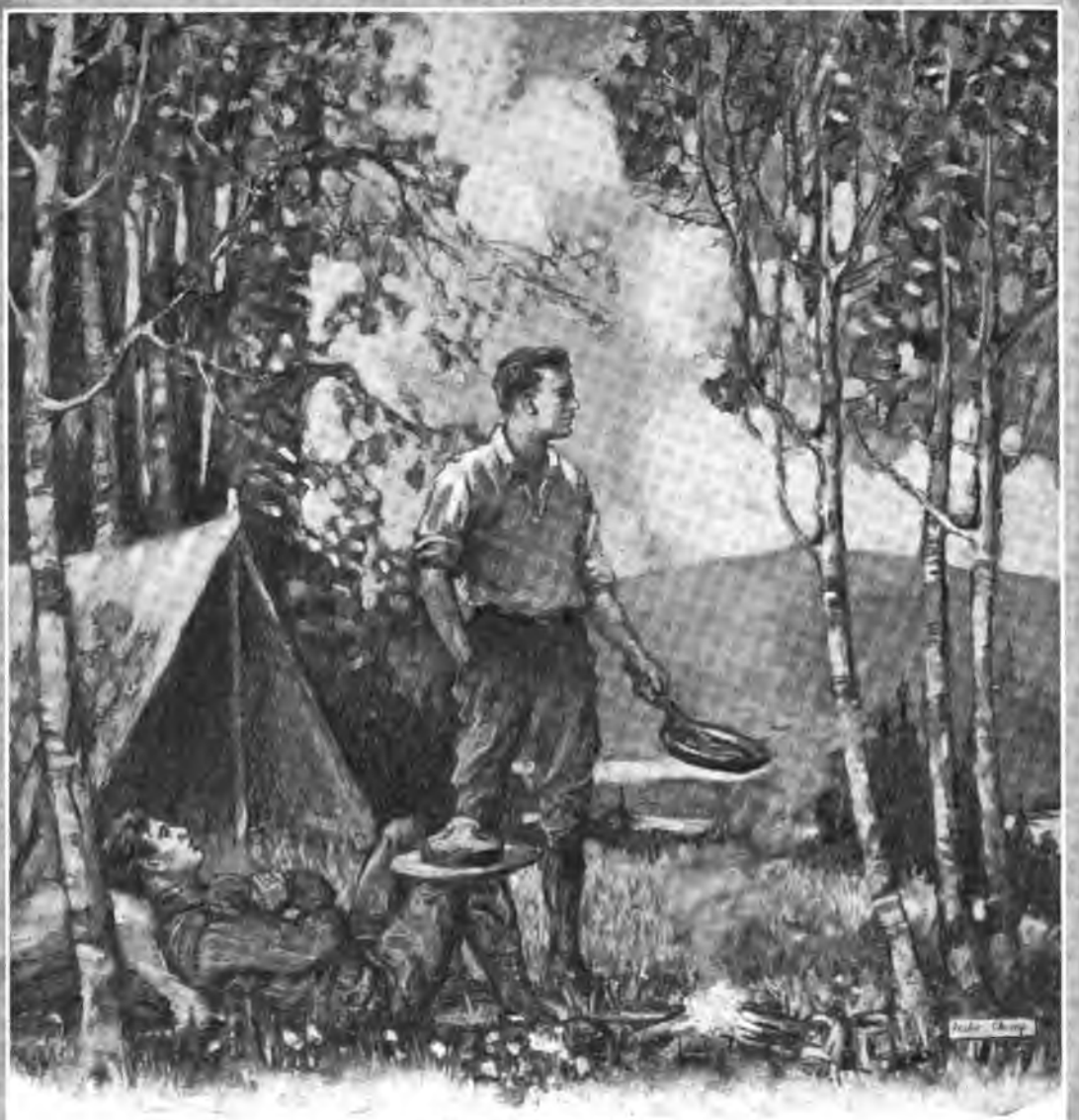
Boiled beans and bacon is the backbone of the frontiersman's bill of fare, and with hard work to sharpen the appetite I have lived on this food for months at a time without getting tired of it. By beans I do not mean the small white bean, but the good, brown, bayo bean that "sticks to your ribs" as the Alaskans say, and gives you strength for the hardest labor.

There is another reason why fried food is unsatisfactory in the open: it does not taste good when it is cold. This is a serious fault when it is necessary to cook food for the midday meal. Meat that has been roasted over an open fire, however, has a delicious flavor when cold, and roasting over an open fire is a simple matter.

The best method of roasting meat, to my mind, is that in use among the Indians in the interior of Alaska. A strong pole is placed across the limb of a tree, or two crossed poles. The meat, usually a large piece, is suspended from the end of the pole with a piece of wet rawhide, so that

it hangs free of the ground and close beside the fire. The meat is then turned with a stick until the rawhide is tightly twisted when it can be allowed to wind and unwind slowly for some time before it is necessary to repeat the operation. A short piece of wire made fast to a rope, or a small rope that has been immersed in water for some time, can be used in place of the rawhide. A frying pan placed on the ground will catch the juices and will enable you to baste the meat thoroughly from time to time. The Thaltan Indians call meat prepared in this manner "scotacook" and no other cooked meat will keep longer or taste better. Many memories of wilderness feasts come back to me when I think of "scotacook." On the Yukon headwaters when the snow began to creep down day by day from the high peaks, and the keen, dry cold set our blood and appetites to dancing, we used to roast great pieces of moose meat, fifty or sixty pounds of fat ribs or hind-quarters at one time, and I can still see the eager faces of whites and Indians in the red glow of the fire waiting for the meat to cook and the feast to begin.





THE SPRING CALL

O Billy, I'm a-seein' things,
A-seein' ghosts of other springs,
'Cause yesterday a flicker's wings
Flashed by like golden light;
The redbud must be bloomin' now,
An' snow be on the dogwood bough;
I'm seein' things, so, anyhow,
I'm sleepin' out to-night.

Then hi, Bill, ho, Bill,
Come on along, an' go, Bill,
Up the hill an' down the hollow all the sunny day;
It's springtime an' wing-time,
It's every-bloomin'-thing-time;
Come out an' follow, follow, xingin' all the way.

O Billy, I'm a-hearin' things,
A-hearin' distant murmurings,
An' songs the dizzy ripple sings—
I cannot stay in town;
I hear the woods a-callin' me;
I hear the dronin' bumblebee
An' cardinals in every tree
Just showerin' music down.

So hi, Bill, hello, Bill,
Come pack your kit an' go, Bill,
Out around the briery clearin' where the rabbits play;
Come on, an' hear the frogs a-fillin'
All the marshes with their shrillin',
Come an' hear the things I'm hearin', hearin' all the day.

O Billy, I'm a-feelin' things,
It's just the gladness Nature brings,
My heart is just like fiddle strings,
My feet are light as down;
If only I could float away,
Just get up in the clouds an' stay,—
I'm goin' woodsin' anyway,
I'm gettin' out o' town.

So hi, Bill, hello, Bill,
Come on along an' go, Bill,
Let's go out into God's own woods, an' just be happy there;
For sure, these blossomy woods is heaven,
Think of all the joy they're givin'—
Let's just be happy 'cause we're livin'—
An', Billy, that is prayer. —Bert Leach.



"You've struck it, son," was the old timer's verdict

A Child of Luck

By Edward Leonard

WITH most of the population of Hangtown everything depended on luck. It didn't matter much how clever a man was or how much he knew. Prosperity was as likely to come to the stupid and ignorant as to the intelligent and educated. It was all luck.

It was just the right place for such a man as Old Kentuck. All his life he had depended on luck. Some men used their brains to get on in the world; Old Kentuck just waited for good fortune to come his way, and a little of it came—sometimes. When it didn't he managed to worry along somehow, with a hopeful eye to the future, which, experience told him, was sure to have something in store for him, though it might be long in coming and disappointingly small.

"No, son," he said to Tuck Simms one spring day in 1850, "brains don't count for much in Hangtown. You just get out with your pick and shovel and dig—that's all. P'raps you'll find gold; p'raps not. It's all luck."

He waved his pipe toward the hillside above his cabin—a hillside torn and furrowed and honeycombed by hundreds of burrowing gold seekers.

"There's a lawyer up there," Old Kentuck went on, "who's been diggin' holes like a rabbit for nigh onto a year, and he ain't cleaned up more'n enough for his grub. And in the next hole to him is a heathen Chinee—an ignorant crittur that don't even know how to read—who fished out fifteen hundred dollars last month. I reckon this ain't the right town for that lawyer, son. He could make more back where he come from. But it's the right town for that heathen Chinee, and for me, too. I'm a child of luck, I am. Lived on it all my life—ever since the day I found a pot of old money buried in a field back home. There was nigh to three hundred dollars in that pot, and me bein' not much more'n a boy it seemed like a pretty big pile. I quit thinkin' about work that very day, and took to thinkin' about luck instead. And it's luck I've been countin' on ever since to get me ahead in the world. Sometimes a little bit of it comes to me, and sometimes it don't; but I'm waitin' for the day when it'll come big—when I'll make my big strike and won't have to count on even luck no more."

Tuck pondered Kentuck's philosophy as he watched the smoke from the fortune hunter's pipe drifting upward through the clear, sun-washed air of the Sierra foothills. He wondered how long Kentuck had been chasing the will-o'-the-wisp. Thirty years probably. He did not look like an old man—not more than fifty—but he seemed old in Hangtown, for the men who had followed the trail of '49 to the gold fields were almost all young, many of them scarcely more than boys, and Tuck was not the only seventeen-year-old adventurer in that camp by any means. Depending on luck didn't seem to have been very profitable for the grizzled Kentuckian.

Thirty years of it, and now he was as poor as if he were just starting out in life. The idea of depending on luck as Kentuck had been doing did not appeal very strongly to Tuck Simms just then as he thought of the long, hard journey he had made from Missouri and recalled the hundreds of disappointed, homeward-bound gold hunters he had met on his way into the hills from Sacramento City.

"How many of 'em strike it big?" Tuck asked.

"Mighty few, son—mighty few," Kentuck replied, as he watched the grubbers on the hill. "One out of a hundred, I reckon—mebbe less. But luck comes to most all of 'em in driblets if they stick here long enough. I've been averagin' ten dollars a day myself, which is better'n most of 'em are doin'."

Tuck's heart sank. Finding gold in California didn't seem so easy as the stories told back East had led people to believe. "It don't seem hardly worth while," he decided, "for all those men to be comin' a couple o' thousand miles or more just to grub round for that much money."

Kentuck puffed his pipe silently for a moment while his gaze roamed over hills and valley sprinkled with gold seekers and their tents and cabins. "Mebbe, son, mebbe," he said at last. "But don't forget the one feller in a hundred that makes the big strike. P'raps that one feller will be you or me some time. That's the idee that keeps all these critturs goin'. They're all thinkin' luck's goin' to hit 'em. They ain't none of 'em countin' on bein' among the ninety-nine out of a hundred that's disappointed. Neither am I. And I got a sort of feelin' that luck's goin' to turn my way pretty soon now. There a place over in the next ravine that looks good to me, and I'm goin' to give it a try in the mornin'. Nobody's bothered about it yet, and this hollow here don't seem to be good for much moren' livin' wages. Want to come along? You've just got here and might as well begin in a new spot."

Tuck jumped at the chance. "Mind if I bring my friends along?" he asked. "There's Jeff Quantrell, and old Ezra Bellamy and a kid named Job Danby below on the flats. We've been traveling together, and I reckon they'd like to try in a new place, too."

Kentuck nodded assent. "Sure," he said. "Bring 'em along. There's room enough over there for all of us. And, son, does any of your party happen to have any readin' matter? No? Not a line? Well that's wheer luck's turned plumb agin me. There ain't nothin' to read in this here camp but Bibles and almanacs. I been here six months and read the Bible through seventeen times for'ards and back'ards. And that almanac o' mine! Say, boy, I've read that blamed thing for'ards, back'ards, sideways and upside down, till I can locate the signs o'the Zodiac blindfolded, calc'late an eclipse standin' on my head, and forecast the weather and prognosticate the value o' the country's crops for the next ten years."

Tuck recalled that he did have a mere scrap of reading matter, a handbill offering a reward of five hundred dollars for the capture of a man who had robbed the express company's office at Sacramento City.

"Just the kind of stuff I like to read," cried Kentuck. "Bring it along and I'll sure be grateful. It'll do me a heap o' good to get some variety in my literatoor. Who's the crittur they're lookin' for? Any name given?"

"Name's Sutton."

Kentuck gave an almost imperceptible start. "Sutton?" he echoed, suddenly looking very serious. "What's the rest of it? Any first name?"

"Dunno as I recollect."

"'Twan't Bart?"

"That was it—Bart Sutton."

A steely glitter had come into Kentuck's eyes, and his teeth fastened savagely upon the pipe-stem. "What's the description? Tall, round-shouldered, red-headed?"

Tuck scratched his head by way of refreshing his memory. "As I recollect, that's just about the way it read," he answered. "How'd you guess it?"

Kentuck swore softly to himself. "The same Bart Sutton!" he exclaimed. "The same ornery cur that trimmed me out of all I had. Son, I wouldn't need no five hundred dollars reward to get that varmint. I'd put a bullet through him soon as I laid eyes on him. That'd be satisfaction enough for me. Me and him was pardners oncet pearl huntin' down South, and when we'd cleaned up a little pile he lit out with every cent of it. Left me dead busted, without even the price of a meal. Ten long years ago that was, and I hain't seen hide nor hair of him since, but when I do he'd better say his prayers in a hurry, 'cause I'm sure goin' to drill a hole through him."

Tuck walked down into the hollow to the spot where he and his friends had pitched a tent, and told of Kentuck's offer. The verdict was unanimous that it should be accepted. Quantrell had been studying conditions in the gulch where most of Hangtown's population were at work, and was not satisfied with what he learned. He could see scarcely any hope there of earning much more than a living. A man who dug up even ten dollars a day couldn't save much, for food prices were very high. The Eldorado Hotel charged a dollar for an order of baked beans, and three dollars for a square meal. Quantrell declared that he hadn't come all the way from Missouri just to burrow in the ground like a mole for a mere living, and that if hunting gold wasn't worth while he would find something that was. He had learned that a Portuguese sailor had recently found gold worth sixty thousand dollars in a sand bar on the American River. A find like that would be worth all the hardships and dangers of the journey across the continent, but that was one chance in a thousand.

The following morning Kentuck led the way to the ravine where he had set his hopes. The method of mining was very simple. They set to work with picks and shovels, each in a hole of his own, Kentuck explaining that they would have to get down to bed rock before they could hope to find anything.

Thrilled by this first attempt to find riches, Tuck worked as if his life depended on it. He had dug down about four feet when he saw in the deepest part of the hole what looked like yellow sand scattered through the earth and gravel. His heart gave a jump. He was not sure, but it might be gold.

"Kentuck!" he called. "Take a look at this."

Kentuck climbed out of his hole, and came running.

"You've struck it, son," was the old-timer's verdict. "It's gold for sure. But don't get too hopeful. Mebbe there's no more than a few dollars here."

Filling a sack with earth from the bottom of the hole, Kentuck packed it on his back to the creek which ran a few yards below. There he showed Tuck how to separate the gold by cradling the contents of the sack. The earth and gravel were washed away, while the particles of gold, sank to the bottom of the pan.

"It's running rich," Kentuck announced after a few minutes of this work while the others stood around him watching eagerly. "Pack some more of the stuff down to me, son, and I'll wash it out."

Tuck brought to him load after load

of the earth that lay within three or four inches of the bed rock, and the old fortune hunter, crouching over the water, worked steadily on with his cradle. Now and then he poured a little stream of gold dust into a tin can. By the time the cradling failed to produce results the can was half full. Kentuck stood it on the palm of his hand and hefted it.

"A leetle more'n two pounds, I should say," he decided. "Five hundred dollars. Boy, that's going some for one mornin'. Better hang on to it careful, for there's no tellin' how long it'll be before you'll find another speck o' the stuff. Just a streak o' luck."

He passed the can to Tuck, whose eyes were sparkling with excitement. Five hundred dollars for a morning's work! Tuck saw visions of wealth. But the old-timer beside him gave a cynical smile, knowing the evasiveness of luck and the disappointments that come to those that depend on it.

Tuck dug another hole, which proved a failure, but he was far from being discouraged—not after such a wonderful morning. His spirits were high; he was sure he was on the road to fortune. By the end of the day his companions had found scarcely enough gold to pay them for their trouble. Kentuck's washings were worth about twelve dollars, while none of the others had found as much. When at last they swung their tools on their backs and strolled back to Hangtown they determined to try again in the same place the following day. It seemed worth while after such a find as Tuck had made.

Tuck carried his can gingerly, fearful of stumbling and spilling some of the precious contents. It was dangerous stuff to handle, it seemed to him. A sudden gust of wind might blow a part of it away.

"You don't want to carry that stuff in the can, son," Kentuck warned him, pulling out an empty buckskin bag from his pocket. "Pour it in this, and we'll hike right over to the Eldorado, where Bill Coggins, the proprietor, will buy all that's brought to him at sixteen dollars an ounce. I better go along to see that Bill don't skin yer. Bill's square in most things, but dern careless when it comes to weighin' gold."

Spread on the floor under Bill Coggin's scales was a piece of smooth, white cloth. That cloth meant two hundred dollars a month to Bill, who had realized after a few weeks of experience in Hangtown that a lot of gold dust was going to waste on his floor. There was sure to be some spilled in the weighing, and after the cloth had been brought into service it was found that the spillings amounted to a good deal, to so much in fact that Bill contrived to spill more than ever. He was getting more and more nervous every day, his hand more and more shaky.

"Steady, now, Bill," warned Kentuck. "I'm watchin' this here operation. Mebbe you've got ague, and chills and fever and paralysis and all that you allow you're sufferin' from, but I won't stand for more'n ten dollars bein' spilled on that floor o' yourn."

"Five hundred and twenty dollars," Bill announced. He counted out ten fifty-dollar octagonal slugs and two ten-dollar gold pieces, and passed them to Tuck.

"I reckon that's somewheres near right," said Kentuck, evidently satisfied. "Come on, son. You got a pretty good nest egg there for a fortune."

They passed out into the night, Tuck bound for his tent, the old-timer for his cabin. "I'm goin' to sit up for a spell with my candle this evenin'," said Kentuck, "readin' that handbill you brung me. It'll sure seem mighty good to have somethin' new to read, and I'm obleeged to yer.

If ever I can do yer another good turn just lemme know."

The next morning found all five of them hard at work again in the ravine. Indeed they were there for many a day afterward, sometimes meeting with a little success, sometimes with none. The best day that any of them had was when Kentuck dug up a little more than fifty dollars. Quantrell was getting discouraged. He had been watching Bill Coggins and the storekeepers.

"Those men don't deal with luck," he observed. "The Eldorado's a gold mine that don't peter out, and so are the stores. They're sure things. I've discovered that the wise man in this country, as everywhere else, is the one that leaves luck alone."

A loud laugh came from Kentuck, who had just climbed out of his hole. "You don't know whatcher talkin' about, Jeff," he cried. "I've just struck it rich. Come over here and I'll prove it."

They all hurried over to the hole in which Kentuck had been working. The gravel at the bottom seemed fairly to blaze with gold.

"Luck!" cried the old-timer, his voice hoarse with excitement. "This is what luck's done at last for me, boys! It's the big strike I've been waitin' for—the strike that's goin' to make me rich. Luck! Don't tell me luck ain't worth tryin' for."

It was a big strike, sure enough. There was no doubt of that. In two hours Kentuck washed out at least twenty pounds of pure gold, and the hole seemed as rich as ever. The rest turned in and helped him. It was a find that would be the gossip of Hangtown for many a day. Tuck felt as if he must be dreaming. He had never seen such riches before. And it was all coming out of a hole in the ground. It was amazing. It was all so easy—so easy to get rich when luck just turned loose and helped a man.

It began to grow dark. They worked until they could no longer see the bottom of the hole, then gathered up their tools for the night, leaving none of them knew how much gold still to be dug out. Kentuck estimated the pile they had washed out already at more than thirty pounds, worth about six thousand dollars according to the prevailing price in Hangtown.

"Enough for one day," he exclaimed joyfully. "Back again to-morrow. Oh, I'm on the road to bein' rich all right. Another day like this and I'll be plumb satisfied. Luck! Oh, I ain't depended on luck all my life for nothin'."

Old Kentuck's dreams of a lifetime were coming true indeed, for it turned out that there was at least six thousand dollars more in the wonder hole he had dug. It was not until almost dark the next day that they came to the end of the golden stream, and Kentuck figured that the day's profits were nearer seven thousand dollars than six—thirteen thousand dollars in all.

"That's a stake that'll keep me in comfort back in old Missouri till the end of my days," he declared. "Didn't I say I was a child o' luck. Born lucky, even though the big strike was a long time comin'. There's only one thing more I hanker for now, and that's to come face to face with that thievin', red-headed varmint that cleaned me out ten years back. And mebbe I will, seein' that he's prowlin' round hereabouts. That's all I'll ask of luck now—the chance to meet that ornery, slippery crittur."

That evening, while tents and cabin windows, scattered through the gulch, glowed with candle light, the whole camp was talking of Old Kentuck's big strike. Sitting in his office in the Eldorado was Bill Coggins, to whom the news had been particularly pleasing. He was waiting for Kentuck, and already his hands were beginning to tremble with the expectancy of

weighing the lucky miner's gold. Bill figured that if he could only be careless enough at the scales his rake-off from Kentuck's pile would be considerable.

Presently the man he had been expecting so eagerly walked in, with Tuck Simms close at his heels. Each was burdened with a heavy sack, and Bill's eyes glistened at the sight.

"How's yer paralysis to-night, Bill?" demanded Kentuck, though not in the tone of one who inquires after another's health from polite or sympathetic motives.

Bill shook his head and sighed. "Bad —pretty bad," he answered.

Kentuck threw both sacks on the table and opened them. Each was filled with a number of small buckskin pouches bulging with gold-dust. "Well, Bill, don't let it get too bad while you're doin' this weighin'," he warned with a menacing look in his eyes. "Too much spillin' and I'll sure have to add some to that paralysis."

Bill opened one of the buckskin bags and poured the contents on the scales, where it formed a beautiful, gleaming cone under the light of the hanging lamp. "Luck's been comin' your way all right," he remarked sadly.

Kentuck grinned. "Everythin' I want comes my way sooner or later, Bill," he returned. "Luck! Why, luck's my middle name. There's only one thing I want——"

Suddenly Kentuck's mouth gaped wide open and a startled look came into his eyes. He was staring at a stranger who had just strolled into the room—a tall, round-shouldered, red-haired man.

"Sutton!" roared Kentuck.

The stranger's hand flew to his hip, but Kentuck was half a second quicker in making the same motion. A shot rang out, and Redhead staggered against the wall. But instead of falling he recovered himself the next instant, and another shot rang through the room. It was Red-head's pistol this time that had spoken.

Kentuck's legs bent under him, his gun dropped clattering to the floor, and he fell forward and lay still. Bill Coggins ran forward and lifted him up, but the old-timer whom fortune had smiled upon was in no need of help. "Dead!" said Bill solemnly. "Dead as a stone."

Red-head shook himself anxiously. He knew he had been hit, but he was puzzled by the fact that he felt no pain and could find no wound. He slipped his fingers into a pocket of his vest, and muttered an oath as he pulled out a heavy silver watch, the case of which was deeply dented. Kentuck's bullet had struck the watch at just the right angle to be turned in its course. It had come out through the back of the vest and had struck the wall.

"That's what I call luck!" cried Red-head. "It's a thing that wouldn't happen once in a thousand times. Luck! There's nothin' like it."

Almost at the same moment a man with a huge silver badge on the front of his vest came hurrying into the room, gun in hand.

"Throw up your hands, Sutton!" he cried. "I've got you dead to rights this time."

Red-head, taken by surprise, obeyed on the instant.

The man with the badge glanced at the body on the floor. "Too bad I didn't get here a little sooner," he said, "but my horse got a stone in his foot comin' up from Sacramento City and it delayed me a good hour. Funny the way luck runs."

Bill Coggins nodded his head sagely. "Mighty funny," he assented. "Say, what am I goin' to do with all this gold?"

The man with the badge rubbed his chin as he tried to solve this problem. "Well," he answered at last, "the boys in this camp will have to try to hunt up this dead fel-

ler's relations, and if he ain't got none the stuff will go to the town, I reckon. Looks like a big strike. Luck was sure with him."

"Luck!" muttered Tuck Simms to himself. "Luck! I reckon it ain't worth while dependin' on what folks call luck."



The Grizzly Bear at Home

By Charles L. (Grizzly) Smith



THE scene of this story is laid in the Selkirk Mountains, north of the Canadian Pacific Railroad, and west of the main Rocky range in British Columbia. It is a country of towering peaks covered with everlasting snows, barren rocks, roaring torrents, and deep valleys; it is drained by the Bush river which empties its waters into the Columbia some thirty miles below the little town of Beavermouth on the Canadian Pacific Railroad. It is a land of deep snows and intense cold in winter but the short summers are warm in the valleys, while the higher slopes are frosty and are frequently visited by blinding snow and sleet storms. The rock ribbed peaks are deeply furrowed by the avalanches of winter and early spring.

Standing at the mouth of the Bush river looking toward the east up the rather broad valley we see on our right a high ridge densely wooded with Canadian spruce, its northern slope cut by many dark and deep canyons where little brooklets descend, their crystal waters foaming over smooth washed boulders. The little Bush river flows lazily between low banks close to the foot of this ridge.

The Bush river valley is composed of meadows, small lakes, willow swamps, and patches of spruce timber, with many beaver ponds along the edge of the valley where small streams flow from the canyons.

On September 1st, 1898, one might have seen a large female grizzly emerging from a dense patch of spruce and balsam timber growing in a pocket of the mountain at the head of steep gulch. It was the huckleberry season and the low bushes were bending with their load of delicious fruit. The bear came at a leisurely pace stopping now and then to sample some extra fine berries that grew in her path, yet she seemed to cover the ground very rapidly for an animal of such unusual appearance. She followed the side of the gulch for some distance and then turned east and came out on a prominent point overhanging the valley.

Just at the lower end of the lake could be seen through a fringe of willows and young spruce a beaver pond where an industrious family of beavers was already clearing the pond of last year's cutting and repairing their house and dam in preparation for a long, cold winter which

they knew was coming. On the shores of the lake could be seen a small herd of caribou peacefully feeding while to the east on the crags of the next point could be seen a band of mountain goats, some feeding, some lying sprawled out on the slopes and with one foot pawing dirt upon their sides.

No sound was heard except the discordant cry of a Clark's crow perched on the top of a dead spruce or the low twitter of a Canadian jay, or, perchance, the honk of a long file of wild geese. God's own peace and quiet reigned supreme, no curling smoke from the hunter's fire could be seen settling like a pall over the sedge of the valley, no spiteful crack of the sportsman's rifle echoed through the corridors of the peaks to disturb their denizens.

As the bear came lumbering along at that peculiar gait which only bears have, she ever and anon lifted her nose in the air, testing the wind as it came eddying from every quarter. She saw the caribou moving about the border of the lake and after one good sniff of the air she paid no further attention to them, but having turned over a few flat stones in search of grubs and digging a few snow lily roots she lay down on a small flat space on the point to spend the night. There is a gentle breeze sweeping across the point and it is this breeze that has brought her here, for it puts the black fly out of commission, the curse of all this northern country in September and October.

The story of this individual bear is fiction but her story presents truthfully the habits and life history of the grizzly bear as observed by the writer in his wanderings from southern California to the far north in Canada, covering a period of over forty years.

While the bear sleeps on the point, the sun sets, and the stars come out as they can only in the pure air of this northern country, where the whole sky blazes with them except low down in the southwest where a bank of clouds hangs low over the distant peaks. In the north can be seen the northern lights, flashing like a kaleidoscope across the sky, the opalescent rays gathering here and there only to fade and reassemble in other parts of the sky. The clouds in the southwest ascend toward the zenith and the stars one by one fade behind the leaden hue of the changing sky.

A puff of moisture-laden air sweeps over the point and the bear awakes, rises from her bed and, with her nose, tests the air, then stretches herself by arching her back as high as possible and, moving forward with her front legs, gives her back a reverse curve, extending her hind feet far out behind, then she yawns and moves off in the direction of the spruce timber from which she had come earlier in the evening, not stopping to nibble at the berries nor to note where a Columbia ground squirrel was storing roots for winter use, but, entering the woods, makes her way to a large spruce with thick, wide-spreading branches. Here, close up between its spur roots she digs a shallow hole and lies down once more and is soon asleep.

The sky is completely overcast and dark and hurrying clouds cast a shadow over the grove of spruce, while far up among the crags and peaks can be heard the roar of an approaching gale of wind, snowflakes begin to scurry eastward, swirling here and there in their descent.

Our bear, having descended from a line of ancestors that had for many ages been exposed to the everchanging climate of these Northern mountains was a splendid weather forecaster and knew by instinct, or reason based upon observation, (who shall say?) that the exposed point was not a good place in a blizzard, took

time by the forelock in finding a more comfortable place.

As if to prove the correctness of her judgment, the storm increased until the icy blasts roared around the crags and the snow came down in a blinding smother, but none of this reached the bear except a few powdered flakes that sifted through the dense foliage of the spruce to lie lightly upon her satiny coat.

When morning dawns the storm has passed, the higher slopes and peaks have taken on a new luster and lie gleaming white in the sun, while a well defined snow line can be traced along the mountain side as far as the eye can reach.

As the sun stole over the eastern range the bear stirred lazily and, after yawning repeatedly, went down toward the valley. On her way she saw the footprints of many of her neighbors who had passed in the night or early morning such as the red squirrel, the pine marten, snowshoe rabbit, Canadian lynx, and many others. Some of these tracks she examined critically while others were passed by unnoticed.

As she descended the mountain the warm September sun began to melt the snow and it slipped from the overhanging branches to splash upon the leaves and rocks below; this she did not like, for, by the force of its fall, it drove its chill moisture into her coat, so she sought a small meadow on a flat surrounded by trees, where the sun shone warm. Her unerring nose led her to a small mound of fresh earth beneath the snow; with one sweep of her paw she brushed the snow aside and disclosed a small hole in the ground. This was the home of a Columbia ground squirrel and from early in July he had been industriously collecting and storing roots for winter use. He had dug a hole deep into the rocky soil going down at a steep angle for a distance of about three feet, then to one side for a few inches then on an incline up for about eighteen inches, then off again on a level where he had evacuated a large area capable of holding a peck or more of edible roots. He had then dug a small tunnel to one side of this granary and evacuated another round compartment the size of a man's hat which he filled with dry shredded grass, to form a warm dry wall; this he used as a bedroom.

The bear by long experience knew the internal arrangements of the little squirrel's domicile and of the plentiful store of roots to be had at a minimum of labor, so she set to work at once to despoil the little fellow of his hard earned stores. She tore at the tough sod and roots and broken stones, making a large hole and finally reaching the treasure. The little store was incomplete, yet she found it ample to repay her for the labor expended, for it would have taken hours to have located and dug each of these roots for herself. After she had cleaned out the little storehouse and caught and eaten her benefactor, she went on down the mountain until she had passed below the snow line, where she found a huckleberry bush which was standing in a little cleared space on one side of the trail. For a distance of some thirty-five or forty feet along the trail, going either way, the tracks of the bear were more pronounced than at any other place, for it is the habit of bears when approaching or leaving a rubbing tree, a cache of food, or a wallow in the swamps, to set their feet each time in the same place, thus wearing deep holes in the moss or loose soil.

On examining the trees one will see sticking to the bark little tufts of hair and fur. These trees can also be told by the deep scars in the bark where the male bears, usually in June or July, have stood at their full height and bitten deep into

the wood. Many different reasons have been assigned the bears in biting trees, some of which have a foundation in truth and reason, and some which the writer believes to be erroneous and misleading. It is the opinion of the writer from years of close observation that this is done only through the mating season, and is merely a provision of nature to develop the powerful muscles of the jaw.

Nearly every wild animal during the season of natural selection cultivates the muscles of the body that are most effective as weapons of offensive and defensive warfare. However, these trees are used by passing bears at all seasons when they are afield as rubbing trees, scratching their backs by standing on their hind feet, with the back against the tree and by a slight bending of the hind legs, with an up and down motion, relieve the itching caused by the ever-present bear flea.

The she-bear, after stopping at a number of these trees, was able to tell with some degree of certainty whether another bear had recently passed that way. In many places the trail was dim and almost indiscernible through the dense undergrowth, while at other points it was well worn and could be easily followed by even a novice.

At certain points where the trail passed a small bog where some spring oozed out of the mountain's base could be seen what is known by the old hunters and trappers as bear wallows, consisting usually of a few inches of water with mud formed by decaying vegetation several inches deep underneath. The bears use the wallows during the shedding season, which is usually between the first of July and the fifteenth of August.

Whether they use these wallows to relieve the itching of the skin caused by the rapidly falling hair or to rid themselves of vermin is a debatable question. However, we know that prior to and after the shedding season they are seldom used. Our bear followed the border of the valley until she reached its upper end, along the border of a canyon and crossing where a tree had fallen across the gorge, and went up the mountain between the two streams.

The slope of this mountain is not as abrupt as some of its neighbors, and has been in past ages a dense forest of Canadian spruce and lodgepole pine, but through some cause unknown, perhaps lightning, an immense area of the south slope, including the slope of the middle range up to timber line, has been burned over. Its trees, long since dead, lay stretched upon the ground in every direction, and among the fallen trunks had sprung up yellow willows; this was the early spring and late fall feeding ground of the grizzly bear. Here they came early in the spring to this exposed slope, where the snow had disappeared, to feed upon the snow lily roots and young vegetation which spring up as soon as the snow is gone. After gathering a few roots and berries our bear climbed higher up the rugged face of the mountain to timber line, then passed round to its northern slope, crossing rocky points and deep ravines, where the deep winter snows slip from the higher slopes and descend in mighty avalanches to the valley below.

On the side of one of these gulches in a dense thicket of underbrush was a small overhanging ledge, underneath which could be seen a hole leading into the mountain side; its entrance was choked with rubble, decaying weeds and brush. This hole the bear examined. By digging away the débris she was able to enter a large room some five or six feet in diameter and some four or five feet high which extended some eight or ten feet back into the mountain.

This had formerly been the home of the grizzly bear, but it had not been used for years, as could be seen by the decaying material upon the floor. This rubbish the bear dug up and scratched out of the cave completely until all was clean; then she went outside and began collecting material for a new nest by gathering large mouthfuls of dry weeds, pine grass and the small branches of spruce and balsam. It required many trips to collect the material needed and she worked for several hours.

The bear wandered over the mountain feeding upon the berries and roots she found in her path. At intervals, however, she visited the den on the mountain slope and added material to the winter nest. The nights became frosty, the snow covered the ground, and it was difficult to dig roots, so the bear turned her attention almost wholly to digging out the winter stores of the Columbia ground squirrels that had by this time completed their stores of roots.

It was not the bear's business in life at this season to expend energy needlessly, but to store it up in her own body for the long winter months when there would be no food to be had. The sun on the southern slopes of the mountain melted away this October snow, and although the cold nights had begun to harden the ground, the bear had but little difficulty in obtaining an abundance of food. And so the days slipped away, the sun receding farther to the south, the nights growing longer and colder, the northern lights becoming more brilliant as time went by. The first of November was now approaching. The wild geese and waterfowl had long since left the valley below, the song and insectivorous birds had departed in the night to their southern homes, the industrious red squirrel had finished harvesting the crop of spruce and balsam cones, storing them away in little piles in the damp moss or underneath the edge of decaying logs and on the damp ground around the border springs. The mountain sheep had sought his winter range on the southern slope of the mountain, where the short bunch grass grew and the prevailing winds cleared away the snow, carrying it across the sharp ridges and leaving it just beneath the escarpment on the northern and eastern slopes.

One evening early in November found our bear many miles from her winter quarters, on the southern slopes of a mountain. She had eaten but little for several days, her coat had grown long and silky, and by the industry of the little ground squirrel she had waxed fat. She had been wandering aimlessly about from place to place, but now she seemed to sense a purpose in life and set out in the direction of her winter home. As she went the storm increased in violence, the wind roared round the peaks and up the steep slopes while the snowflakes fell in ever increasing numbers, and drove into the bear's fur as she made her way across the valley and up toward the timber line on the opposite mountain to her winter quarters. The material for the nest had been merely piled into the cave; it had not been formed into the use for which it was intended, for this could only be done after the bear had entered her den for the last time. So, going inside she took some of the coarse material and completely filled the entrance to the den. Then she took some of the finer material and lined the basin-shaped bedding place in the back of the cave. After this had been done to her satisfaction she lay down in her nest, curling up in a round ball, softly singing to herself the lullaby of bears while hibernating, a peculiar trait of bears by which bear dens have been discovered while buried under several feet of snow.

Many stories have been told of hiber-

nating bears, such as that they suck their paws, which may have some foundation; in fact, the writer, observing a pet bear while hibernating, discovered that, though it did not suck its paw, it constantly licked between the toes of the front paw while making the noise that I have called the bear's lullaby, the sound of this being, as near as can be described in words, *ludel, ludel, ludel, ludel, ludel,* uttered in rather a high falsetto key.

The she-bear lay in the den, sleeping peacefully while the storm raged outside until some time between the first and fifteenth of January, when there were born to this mother bear two very frail and tiny babies, only about seven inches long, without fur and almost as helpless as an infant human. The mother bear had to use great care, owing to her immense weight and the shape of the nest to keep from crushing her babies. And now we come to one of the most remarkable facts known to natural history; here was this mother bear, shut in her den, her front door securely fastened, without a mouthful of food or a drop of water, with the task not only of sustaining the lives of the two babies, but of imparting to them a sufficient share of the energy which she had stored up in her own body during the summer and fall to make them grow strong and husky, so that by the twentieth or the twenty-fifth of the following May they were the size of full grown cats and were able to follow the mother wherever she willed.

As the warm rays of the returning sun in April began to eat their way into the deep snows, avalanches became more frequent and more destructive in their passage down the mountain slope. The mountain goats, with all their knowledge gained by years of experience, were not always able to avoid the dangers of that immense snow slide, for a small bit of snow falling from some pinnacle of rock, when the temperature was just right, would gather more snow to itself as it rolled down the slope, ever gaining in bulk and speed until hundreds of thousands of tons of wet snow poured down the mountain side like a mighty river, and woe betide the luckless mountain goat or sheep that was found in its path, for there was no escape.

About the twenty-fifth of May the mother bear emerged from her den with her two babies. For the first few days they did not travel far afield, but found some sheltering ledge on the southern slope where the sun shone warm, and while the mother bear dozed comfortably in the sun the two cubs wrestled and boxed, fought or climbed over the rocks or up a tree, and in this way passed away the lengthening spring days. Then the mother took them down the mountain side in the direction of the Bush River to the feeding ground, where the snow lily grew in abundance and where young and tender vegetation was springing up, and taught them how to dig roots. The mother bear knew this country well, for it was here the bears come from all over the surrounding country, owing to the early growth of the vegetation. Here she took up her abode with her two babies, eating roots and feeding upon the carcasses of the winter killed animals, until the snow had left the valley.

The serious business of educating and caring for her two babies through the short summer now began, for it was necessary that they should know by sight or smell each plant and root that make up the bill of fare of the grizzly. At first, the little ones took but little note of what the mother did, but spent their time rolling on the ground, wrestling or boxing, or sleeping in the sun, the mother being able to furnish all the nourishment necessary for their present needs, but the time soon came, as they grew stronger and larger, when they were not so easily satisfied and

as the mother, with her huge paw, tore up the rocky soil in search of roots they took on an added interest in the serious affairs of life.

The young bears grew stronger and more self reliant as time went on and finally came the time when they must think once more of the long winter months when there would be no food to get, so rather earlier than had been the mother's custom when she had no young to look out for, she took them back to the old den on the mountain side and the three of them set to work to prepare it for the long winter sleep. After the snow and wind roared through the peaks during the long winter months the warm spring air came again and the snow slipped from the mountain side into the valley below, they once more came forth from their winter quarters, but the order of things was somewhat changed. The mother bear the summer before had been very solicitous of the welfare of her babies, but now, as spring advanced, she became careless and seemed to care less for them, but they still wandered together until one day a mighty grizzly came out into a slide where they were feeding and the mother seemed to forget her young and prefer the companionship of this immense bulk of fur and muscle and bone. And it became at once apparent that the old male grizzly who had come suddenly into their lives felt a decided resentment of their presence, so the two cubs wandered away by themselves, keeping together for some time, but as the summer went by, caring less and less for each other's society, until they gradually drifted apart, and when the following hibernating season came around each one found a den of its own and the mother was soon forgotten.

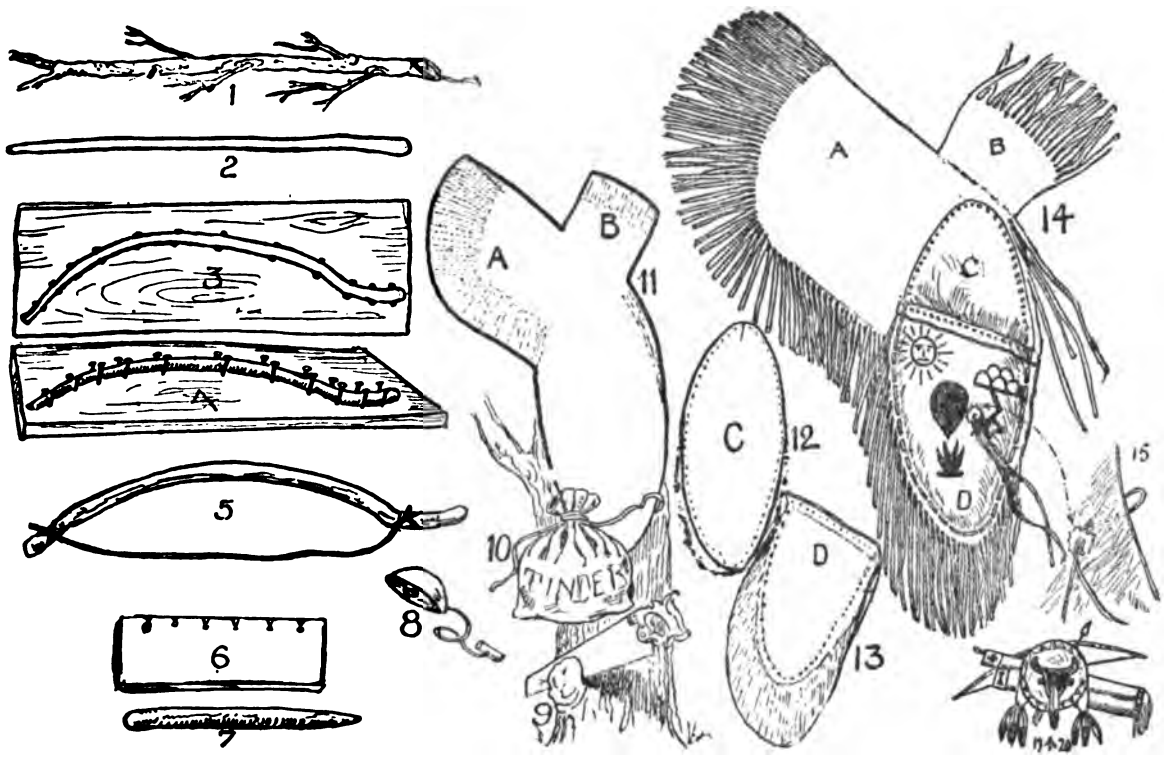
Training the Eye to See

By Edwin Tarrisse

THAT the faculty of sight needs training will be admitted by every reasonable person, but how best to give the eye this advantage is a question that has never been settled. An English hunter has gathered some interesting data in this relation.

It appears therefrom that the reason the different characteristics of tracks are not observed by the untrained eye is not because they are so very small as to be invisible, but because they are—to that eye—so inconspicuous as to escape notice. In the same way the townsman will stare straight at a grouse in the heather, or a trout paused above the gravel in the brook, and will not see them; not because they are too small, but because he does not know what they look like in these positions. He does not, in fact, know what he is looking for, and a magnifying glass would in nowise help him. To the man who does not know what to look for, the lens may be a hindrance, because it alters the proportions to which its eye is accustomed, and still more so because its field is too limited.

Undoubtedly the tiny indications that an animal leaves behind it, such as for instance stones moved a trifle so as to expose new soil, are much more easily seen a few yards ahead than at one's feet. On snow, the freshly thrown out particles which the sun has not yet rounded off are invisible under one's nose; but look ahead a hundred yards, and there one will see without difficulty the very different character of the track made five minutes before from that made an hour ago.



Outdoor Handicraft

By Dan Beard

EVERY scout is supposed to know how to make the rubbing sticks, popularized by Mr. Ernest Thompson Seton, but I have discovered that every scout does not know how to make them, therefore I will say, in the good old-fashioned way, take a stick, Fig. 1, any old stick so long as it is green and strong, trim off the branches and peel off the bark, Fig. 2. Now take a board, Figs. 3 and 4 and bend your stick to the form you wish it to be when used as a bow, hold it in place by driving nails on each side of it in the board, Figs. 3 and 4, Fig. 3 is the top view and 4 is the perspective view of the bow stick bent and fixed for drying. After three or four days the nails may be removed and you will have a bow with a permanent bend, Fig. 5. To this bow attach a whang string, a whang string you know is a belt lashing made of rawhide.

The Whang String

is too slippery for our purpose, so we will twist it before we fasten it to the bow, and rosin it as you would the horsehair of a fiddle bow, that will give it a "bite" and prevent it slipping over the surface of the spindle. Treated this way the whang

string will work—we have tried it. Fig. 6 shows the fire-board, Fig. 7 the spindle, both of which you know all about (maybe); possibly, however, you do not know that a section of broom stick makes a good spindle, and that white wood, such as you can get at the lumberyard, will make a good fire-board. Fig. 8 is the thimble. Many boys have thimbles made of stone, but they are heavy and uncomfortable to carry. Make your thimble from one of those knots, bunyons, or corns, which grow on trees and are known as burls. Saw off the burl and attach a toggle to it as you would a noggin. Make your tinder of the dried inner bark of a dead chestnut, I say dead chestnut because there are plenty of dead chestnuts everywhere in the country, maybe cedar bark is better, the nest of a mouse is good, but we will use dead chestnut because everybody can find it. Keep your tinder in a buckskin bag, Fig. 10, make your own buckskin bag. If you cannot secure buckskin make it of chamois.

The Fire Bag

Get a piece of tanned sheepskin, buckskin being practically unobtainable; cut the leather in the form shown by Fig. 11, then make a piece of stiffening from pasteboard, or any other similar substance, even of tin, and cover it with chamois skin, C, Fig. 12, sew it on to Fig. 11, as it is in Fig. 14. Next cut the piece for the pocket D, Fig. 13, and sew D onto C, as it is in Fig. 14.

You will note that D is hemmed, so to speak, at the top, Figs. 13 and 14, that is, the raw edge is turned over and sewed down, but this edge is not sewed to C, it must be left open so that the bow, the fire-board, the spindle, and the tinder may be carried in the pocket thus made. You will also note that the shape of Figs. 11 and 14 correspond, that is, agree with the bend of the bow, so that the bow may be slipped in easily and fit there comfortably. In order to sew these parts together use a leather punch to make holes for your whang string thread, C, Figs. 12 and 13. Sew C on first, as already described, then over it sew on the pocket D, Fig. 14. If you have no leather punch make the holes with a wire nail, do this by spreading the leather on a board and by use of a hammer, drive the nail through the leather at the spots indicated.

The Fringe

After the thing is all sewed together cut the fringe as indicated by the dotted lines on Figs. 11 and 13. Now when the flap A, Fig. 14 is brought over it will cover and protect the top of the bow and the contents of your bag. In order to fasten it down, so that it will not flap around while carrying it, make a little rosette of leather, Fig. 15, punch two holes in it with a leather punch, and run a leather shoestring through the two holes and through the pocket cover D. This rosette should be put on before the pocket itself is sewed on the back. The shoestrings may be used to tie down the flaps A or B when you wish to keep your case closed. Of course it should be decorated with all sorts of signals and symbols that you will find in my book on that subject.

Now, the writer will confess that he has trapped for the purpose of catching wild animals *alive* and when he was a kid the same as you fellows, he had a regular zoölogical garden in his backyard, rabbits, raccoons, possums, crows, the now extinct passenger pigeons, besides a lovely lake made of two scow-shaped washing machines and filled with live fish and water plants.

To-day the backyard is almost as extinct as the passenger pigeons, so I must tell you how to make cages for small mammals, like squirrels, American whitefooted mice, short tailed meadow mice or voles, which a fellow may keep in his own room.

The Material

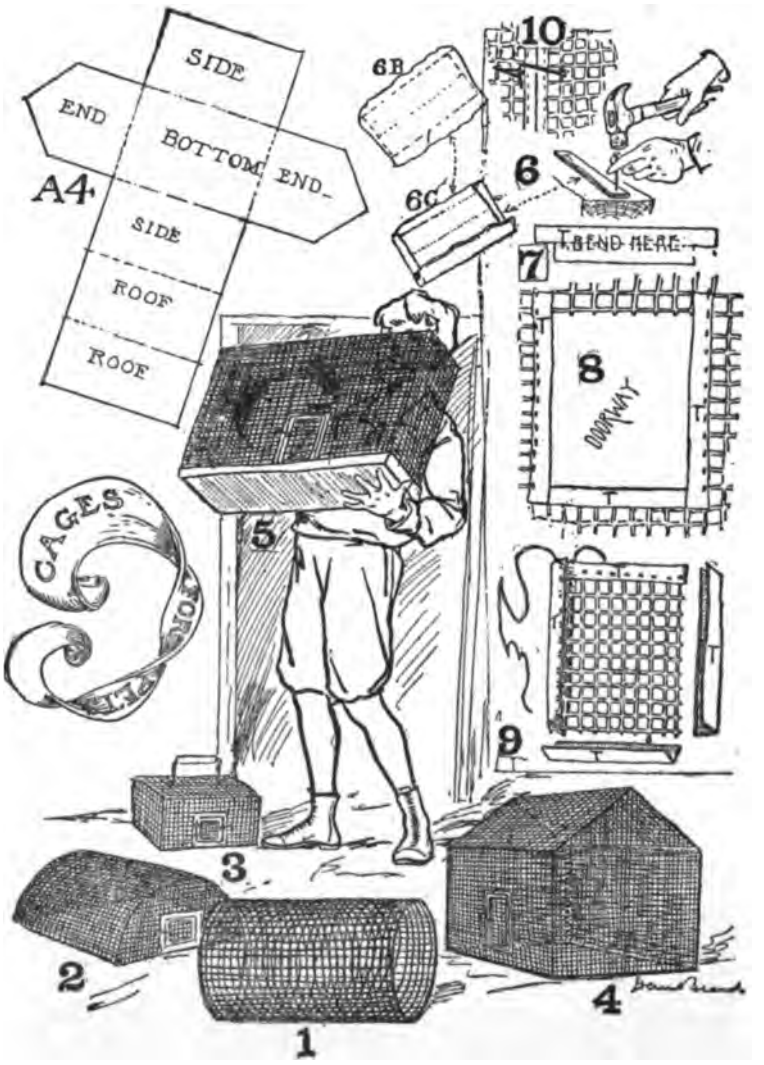
is wire about a quarter of an inch or maybe a half inch, some old tin cans, a hammer, a wire nail, and some copper wire or picture wire.

The simplest cage is made of a roll of wire netting with the edges sewed together to form a cylinder, shown in Fig. 1, and a circular top and bottom. The next most simple one is shown by Fig. 2, a cage with a half round top; a handy little cage in which to carry pets is shown by Fig. 3. Fig. 4 shows one made in the shape of a house.

Now then, in order to make these cages it is not necessary to cut the wire netting up into many pieces, if you first make

A Pattern

of stiff wrapping paper and bend your pattern in the form you desire so that you may be certain that it will fit together properly and accurately, the pattern for Fig. 4 would be like that shown in Fig. A, 4, when the two ends are bent up and the two sides bent up, you will have it the shape of a house, with a roof, the roof of course must be bent in the center along the dotted lines, so that it will be in the form of a roof, then the loose edges may be stitched together with the wire, and the ends of the wire neatly twisted together by the use of a pair of pincers. The wire netting may be cut with shears made for that purpose or with a cold chisel or by placing the wire flat upon a solid piece of wood and using the blade of a hatchet for a chisel. Cut the wire by hammering on the head of the hatchet and driving the blades through the wires.



Before the cages are put together, however, you must provide a doorway which at first seems to be the most difficult thing to do, but it is only difficult in appearance. In fact this whole cage is one of the easiest things in handicraft to make. In the first place you knock your old tin cans apart until you get a piece of tin, we will say like the shape of Figs. 6-B and 6-C, it may, however, be any old shape. To make it of the size and shape we wish we fold it over at the dotted line, as it is started in 6-C, and hammer it flat as it is shown completed in Fig. 6. This we do to give a smooth edge to our piece of tin so that it will not cut the hand, or the creatures confined in the cage.

Of course, we cannot sew tin like we would a piece of cloth, even a tenderfoot has sense enough to know that, so we will take our wire nail, Fig. 6, and drive holes through the tin with the nail, by first placing the tin on a solid piece of wood, and then using a hammer, and after we have made the holes through the tin we will fit it on the raw edges of the wire netting where the doorway has been cut. In order to do this the side pieces must be made of the form shown in Fig. 7, so that the edges which stand up and down will fit the door sill above and below, as shown in Fig. 8. The letter T in all these cases being the tin.

Fig. 9 shows how to sew the tin on the door itself, after the doorway or opening has been finished, and when the doorway has been hemmed, like a hemstitched handkerchief, the door is easily fastened to the door jambs with hinges made of wire loops, after which a wire loop and a hook, Fig. 10, can be made to securely lock the door.

Since this is the Moon of Difficulties suppose we try something more difficult than the preceding stunts, let us make

A Traveling Cage

for small pets and we will make it after the pattern of one I have and in which I have carried flying squirrels from Indiana to Connecticut. This cage is made of a tin coffee can, Fig. 11, five and three-quarter inches tall and four and one-quarter inches in diameter, Figs. 12, 15 and 16 show the front end with the door closed, Fig. 15 the rear end with the barred window made by cutting a hole in the bottom of the can and soldering short pieces of wire across the opening. Figs. 13 and 14 show how the hinge and the catch of the front door is made respectively of a piece of tin and bits of wire soldered on to the can. Letter C, Figs. 12, 15 and 16 show how the stand is made of a strip of tin bent up at its ends and soldered on to the can.

Letter A, Fig. 15 is a disk made of the bottom of a cigar box which fits tightly in the can (see dotted lines Fig. 15 and A, Fig. 16) and serves as a partition separating the nesting room in the rear from the front hall or area way.

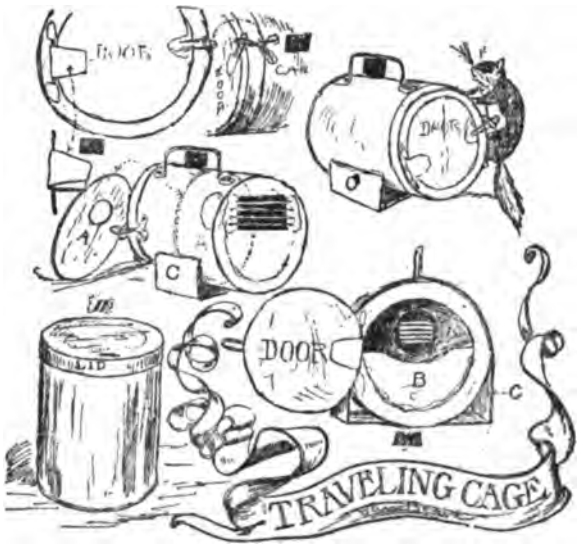
B. Fig. 16 is a bit of tin soldered on the opening cut in the lid of the box so as to partly close up the hallway and give less opportunity for the prisoner to escape when the door is opened. The dotted line on the lid, Fig. 11, shows how the circular doorway is cut in the lid before the latter is soldered to the can.

In Fig. 5, the cage the boy is carrying is not unlike one I made in which to keep some white-footed mice. This was a tall narrow cage about the shape of Fig. 5, if the latter is set on end, and it had a bottom made of a sheet of tin sewed onto the wire netting with picture wire, as described for the doorway. In the top of the wire cage an abandoned bird's nest still in the original crotch of small branches

where the bird had built it, was wired to the side of the cage. The little white-footed mice used the bird's nest for their sleeping quarters. The bottom of the cage was sodded with grass, and after a time the mice took the bird's nest all to pieces and carried the material to the floor, there they added the grass which they nibbled off from the sod, and made a nest in the earth of the sod itself. Sometime after this nest was completed it was examined and was found to contain a whole family of funny little mice.

Now in the woods, if we want to carry milk, we will need a milk pail, or if we want to carry water we will need a water pail, or if we want to carry berries we will need a berry pail.

In making our pail we will begin with the handle, but in order to make the handle we must know how



To Make a With

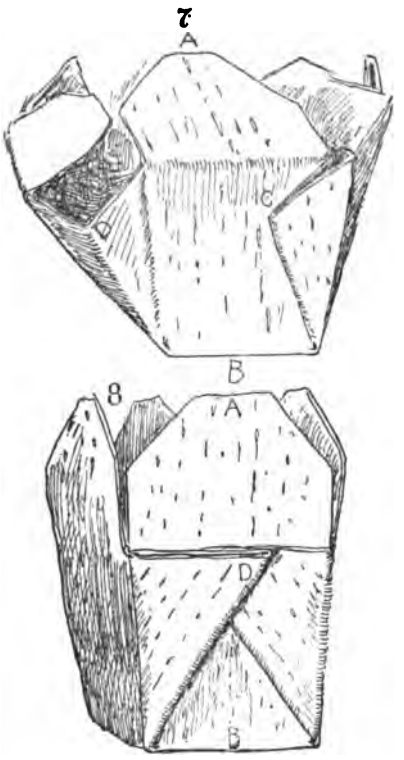
and you must know what a with is and what to do with a with. The easiest way to make a handle is to find a small sapling from which one may readily peel the bark, Fig. 1, and then to take that bark and twist it, Fig. 2, quite tightly, after which bring the two ends of the bark together and hold them in one hand, and allow the natural spring to the twisted bark to twirl 'round and 'round of its own accord, so to speak, and thus make for us a double stranded rope. The strength of a bark rope depends principally upon the kind of bark used for the purpose. Rope the size of a clothesline is strong enough to support a man, but soon we will have no American chestnut trees—they are doomed to die; cedar bark, however, is excellent, and all that is necessary to say now is for you to select some bark and experiment with it until you find one suitable for your purpose; if you are unsuccessful in your search don't be downhearted but take a young stick of hickory or some other tough wood, Fig. 3, and beat it well with a club to loosen the fibers, then with your foot on one end of it, Fig. 4, use all your strength and twist it into a rope, called a with. After you have made your with, and made a good one, you have learned some real woodcraft and are ready to do some skilled work with a piece of birch bark and make a

Pail to Hold Water.

Of course, it is necessary to make the opposite sides equal, you can, however, have the bottom piece square or rectangular.

The birch bark is in numerous layers and may be split as thin as paper, but we want it only thin enough to be pliable, then after cutting out the piece we fold it as shown in Fig. 7. A B, on Fig. 5 is the same as A B on Fig. 7, and just the same as A B on Fig. 8. After you have folded

the corners over into triangles, your pail is complete all but the handle and it will hold water, milk, soup or berries.

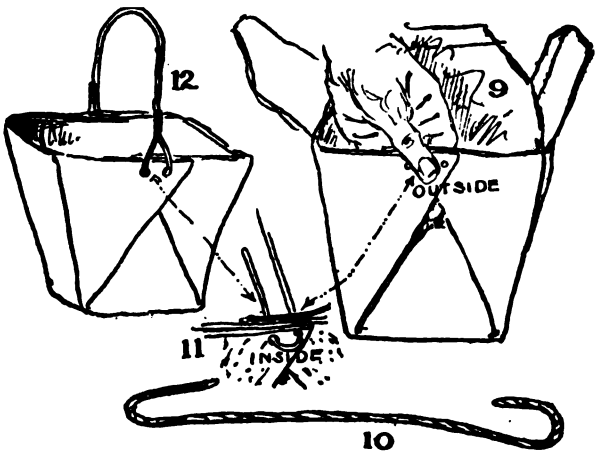


If your bark is stiff soak it with warm water, or hot water till it bends readily. Now then, in order to put the handle in your pail, you will have to punch holes through the two triangles at the upper end, as in Fig. 9. You will note that the hand of the workman is slipped between the two ends of the triangles and the side of the pail, that is to show you that the holes are only to go through the folded ends of the triangles. After making two clean round holes with a nail, or some similar instrument as is in the diagram, poke the end of the handle piece, Fig. 10, through the hole from the inside, Fig. 11, and bring it outside as shown in Fig. 12. Fig. 12 has the top of the pail removed in order to make the diagram more simple. When the handle is attached, Fig. 12, the pail is complete.

In case you do not want a top to the pail the sides may be turned over and stitched with cedar bark. This may be done by punching holes with an awl or sharpened nail and then running the fiber thread through the holes.

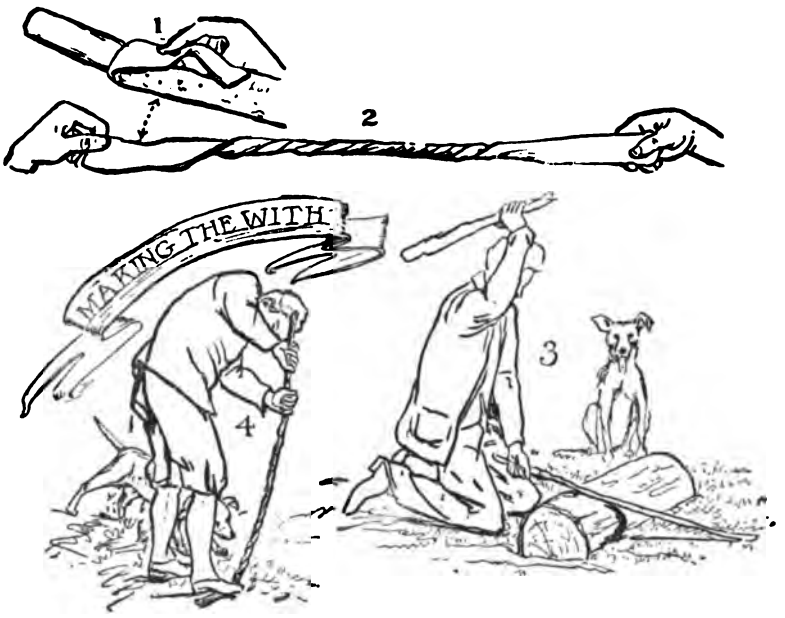
We scouts must get back to the old time scout methods of making things for ourselves, we must know the value of a pocket knife and how to use it. In the olden days we used to value a jackknife above all other tools and at school often recited the following verse or one something like it:

"The Yankee boy, before he's sent to school
Well knows the mysteries of that magic tool, the pocket knife.
To that his wistful eye turns from his mother's lullaby,
His hoarded cents he gladly gives to get it,
And leaves no stone unturned till he can whet it.



Outdoor Handicraft

In the education of the lad, no little part
that implement hath had,
Projectiles, music and the sculptor's art,
The cornstalk fiddle and the shingle dart,
The elder popgun, with its hickory rod,
And the sharp explosion of the rebounding
wad."



When the Bear Beat Bill

By Ed. L. Carson

Illustrated by Frank J. Rigney



A half-grown bear was nosing his way into the tent

THE big Scout Camp was formally declared open for the season for when the boys arrived that first morning they found that Saskatoon Bill had been there ahead of them long enough to have everything in readiness for occupation. Tents had then been pitched in regulation style and record time and different members detailed for special duties according to the recognized methods of procedure in all well organized camps.

Nor had the day been entirely devoted to preparation. In the afternoon Blackie Edwards had furnished considerable excitement for himself and decidedly more amusement for his companioins by following the track of an old Indian, who had passed in his bare feet, to his habitation four miles and a half away, under the impression that he was trailing a bear. Returning hot and tired from his nine mile hike he told of his disappointment in a tone which should have moved his hearers to sympathy.

It didn't. They threw themselves down by the campfire and howled like timber wolves at the recital. Slim Harris wanted to know why he had not at least brought back the Indian's scalp in token of his displeasure. "Pippy" Sills declared that Blackie was at fault in not smelling the tracks before starting off on such a chase. Cliff Smith was of the opinion that Blackie had shown considerable courage in taking a chance on meeting a bear.

"Chance nothing," scoffed Pippy, "everybody knows that black bears will run from a man, and that is the only kind you would find around here."

"Yes, from a man," agreed Cliff, "but Blackie is not a man yet and the bear might take a fall out of him for luck; besides, any bear will fight if it is cornered, won't it, Bill?"

Although he hated to hurt anyone's feelings, the old guide had no alternative except to stick to facts when the habits of

wild animals were in question and with evident reluctance he replied:

"They will sure fight when they are cornered and Blackie showed that he had nerve in chasing up what he thought was a bear. At the same time, bears are not really easy to corner as I happen to know."

"Did you ever try it?" asked Blackie, with a view to leading the conversation into other channels.

"Sure did," was the response, then, after a reminiscent pause, "and made a rotten failure of it."

"Tell us! tell us!" came from all sides and so Bill gave the boys the benefit of his experience:

When the land boom was on in northern British Columbia on account of the new railway going through, all kinds of people came flocking to the Skeena River district with the intention of taking up homesteads. I knew that country pretty well and happening to meet up with a pilgrim in Prince Rupert by the name of Mr. Herron, who seemed to be considerably above the rest of the half-wits who were rushing in, I agreed to show him a place up river on a good sized stream where several snug claims might be staked.

It was sure a neat little valley and, no matter how it might look in the winter, in summer it was a rest for weary eyes. He fell in love with it as soon as he saw it and after we had staked out his hundred and sixty acres, which the law allows to each person, he wanted to go right on and stake some more. I called his attention to the fact that he had his allowance but he told me that he was taking up a claim for each of the ladies.

This was the first I had heard of these parties except that one time he had told me he was married but, thinking he might be trying to forget it, I had never mentioned it again. Now I began to get interested.

"Where are the ladies?" I asks, offhand like, "and who are they when the census taker comes around?"

"Why, my wife and my sister and her young sister," he tells me.

"Is your sister's younger sister any rela-



That was some kick!

tive of yours?" I enquires, some interested in his answer.

"Ha! ha!" he laughs. "Excuse me, old chap, I rather mixed that. I mean my wife and my sister and my wife's younger sister, my sister-in-law, don't you see. We are all going to take claims adjoining and I left them in Prince Rupert while I came ahead and got their land for them."

"Then you had better get them up here and let them do their own staking," I told him. "Every person does their own locating in this country because it saves a lot of trouble about the title later."

"By Jove! you're right," he declares as if it had just struck him that there were certain laws to be observed when taking up a claim, "I had not thought of that. But what if someone stumbles on to this place while we are gone after them?"

"What for do we both need to go? Can't you herd them up here alone?" I asks.

"Do you mean to stay here all by yourself and hold the claims?" he gasps.

"Why not?" I comes back at him, looking as desperate as I could without cracking my face.

For a minute he could not speak. Then he grabs hold of my hand and declares:

"I'll never forget this, old chap, and I'll get back just as soon as I can."

"I'll be here when you come and will probably be in pretty good health so don't hurry on my account."

He left me next morning promising to be back on the first boat while I undertook the desperate task of cooking myself three good meals a day and keeping myself from falling in the creek.

He did not come on that first boat but a whole lot of other things did. I often wonder why people don't study how to get along without things in the wilderness instead of loading up with a lot of unnecessary junk.

When he told me about all those sisters I thought he might have some idea of starting a convent but when I saw the tent he sent up I made up my mind that it was a circus he was planning. It was big enough for a camp meeting and had partitions so it could be divided off into three rooms, one-half of it as a sort of living room and the other half cut in two for sleeping places. It was some awning, take it from me, and it sure took some hoisting to get it set up.

I got everything ready while I was waiting for the bunch to come, for it was my intention to hop into my canoe and bend the paddle getting down river as soon as they showed up. Not that I am skirt shy, but women in the wilderness always seem as much out of place as a skunk in a school room. You know how girls are, even in a summer camp.

Two days after that they came, all rigged out regardless, each one packing a six-gun which I was very pleased to see was not loaded, and plumb scared to death at the idea of being so far from a street car with never a cop in sight. I suppose they never will get over their surprise at finding me alive and well.

They looked around them after the steamer had pulled out and made funny little noises like they were telling themselves that there was nothing to be scared of—and not believing a word of it. Me, I swelled up like an old hen with a bunch of chickens and tried to look reliable and motherly and I guess I made good at it for they all clustered around me so that I had to be careful not to tramp on some of them by mistake.

By supper time they had grown brave enough to go into the tent in pairs but their best bet was to stick around where I was and pretend to help me. I set them to building a fire to cook supper with and the first thing they asked me was where

was the wood? Get that? And the timber all around us! But they never thought of asking for the ax.

I got the smudge going and then they were more at home, at least they said they were, so I told them to go ahead with their cooking. That was a mistake, for they had brought some fresh pork chops up with them and when the first panful was scorched by trying to cook it without turning it over, they promptly dumped it on the coals and filled up the pan again.

The smell of that burning meat was carried on the breeze to the mountain tops, an invitation to make an evening call to every wild thing within a radius of miles, from cannibals to coyotes. Of course, I said nothing about it. Those girls were nervous enough as it was. Just the same, they could see that something was the matter and maybe were more scared about it than if I had told the truth.

Bedtime came and we lighted up the tent. Not that any lamp was really needed, for there was a good moon, but they simply would not go in there where it was all dark and goodness knows what wild animals was lying in wait for them. They nearly threw a fit when they found I was going to spread my blankets under the big spruce, where I had already spent so many comfortable nights. What if something should come around in the night? they asked. I looked fierce as I could and told them that nothing didn't dare.

When all was quiet I went to sleep and dreamed that one of the sisters sneezed in my ear. That woke me up, of course, and I sat up and took a look around. Just as I expected, the burning of that fresh pork had attracted something, a half-grown bear, who was now nosing his way into the big tent where the grub was stored. I slipped on my boots without lacing them and sneaked over just as he disappeared inside.

Now, it was light enough out where the moon could be seen, but in the tent it was considerably dusky. I stood still for a minute trying to get my bearings and so did the bear. Then he sniffed at the sugar sack and I could just make out his shape as my eyes began to get used to the darkness a little.

I injuned across the tent and drove my boot into his ribs for all the kick there was in me. I mean to say, that is what I tried to do. What I really did was to miss the bear in the dim light and smash into a box that seemed to have all the tinware in the world piled into it. That was sure some kick, for it shot all the tins out of the box and turned it upside down over the bear. This made him hard to find for a few seconds, but after the box had chased me around the tent a few times I got wise to the fact that he was not behind it, but under it.

I histed up the side of it and made him come out of that, which he did by shooting between my legs so sudden that we changed places—that is, I was in the box and he wasn't. I was just crawling out of the thing when the boss came through the partition and began to blaze away with a six-gun. I hollers for him to stop it, but the bear just then turned over the table with a million or so dishes, all of which broke when they fell, so Mr. Herron could not hear me for the noise. He was shooting some wild, for one bullet took off the heel of my boot, while the next one sang past some three inches from my left ear. Of the other four shots, one ruined the tea kettle, another punctured the molasses can and spoiled quite a few clothes, while the other two went out of the top of the tent in the general direction of the North Star.

The women were screaming their heads off and taking turn about at fainting away,

only recovering to howl some more and faint again. That was what I gathered from the sounds that came from that direction, when the boss caught sight of the bear and dived back through the partition to a strategic position under the mattress. I made a leap for the bear and would have landed square on top of him if he had stayed there.

As it was, he moved so that I came down solid on a sack of flour and busted it wide open. The bear had run behind it, and when he came back through the hole I made in it he looked like his own spook. This made him more visible like and I got in a couple of real kicks on him before he butted his way out through the tent and disappeared in the gathering gloom and the underbrush. I made one last kick at him as he went out, but he was making better time than I thought for, and I sat down so hard that I jarred the artificial cherries on my grandmother's bonnet in Montreal.

I got to my feet slowly and carefully and lit a lamp.

"Put it out!" screamed a female voice from the bedroom section.

"I have already done so, madam," I answered.

"No, you haven't. I can see it burning."



The bear turned over the table with a million or so dishes

"Oh, you mean the lamp, do you?" I asks. "Well, take it from me, I have put everything out I'm going to. You can do the rest when I have gone." The broken teacups I had sat down on when I made my last kick had been a warning for me to watch my step till I got clear of the wreck.

"Oh, are you hurt? Can we help you?" This from the sisters.

"I am not and you can't," I told them, firmlike, feeling glad that at least half of my statement was true.

Just then the boss showed up on his hands and knees with a blanket draped over him that had stuck to his back when he crawled from under the mattress.

"What was it?" he gasps.

"A quill-pig, I guess," I said promptly, for I didn't dare tell them the truth unless I wanted the job of paddling them back to Prince Rupert that night.

"A quill-pig?" he yells. "Do you mean a porcupine? Why, man, that animal was as large as a cow! I fired six shots into it and they took no effect whatever."

"I didn't see that one," I tells him. "What I saw was a whole lot smaller. It sneaked into the tent and I just came over to throw it out."

Can you guess what he asked me then? He said:

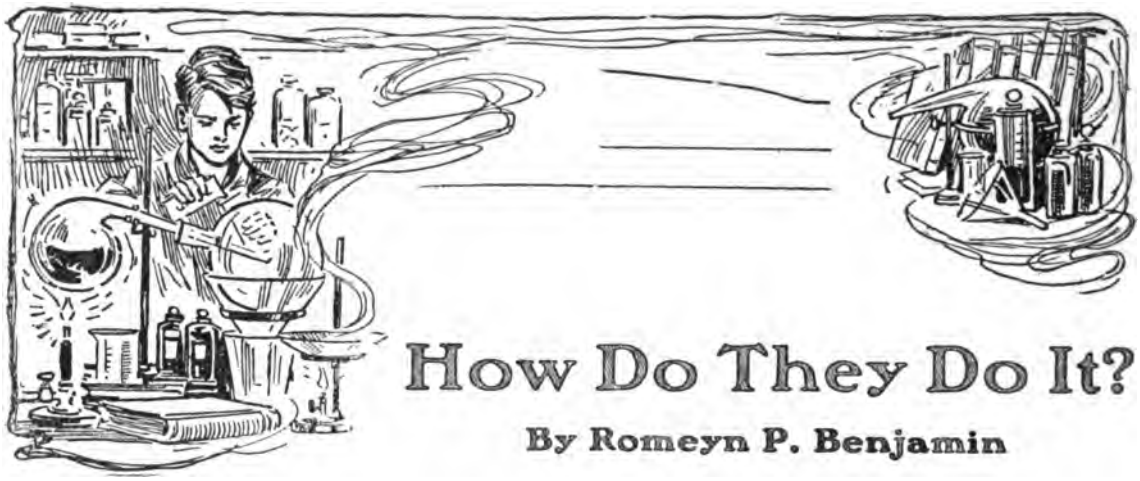
"Good heavens, man, why did you not shoot it?"

How was that for a question? I never answered. I just went back to my blankets and about morning they did the same. We all slept till noon, and as the place did not look nearly so dangerous in daylight we managed to get the women feeling so brave that they stayed for a week and were really getting to like it when the time came to go down to the land office and register.

Which goes to show that, while a bear will fight if he is cornered, sometimes they are real hard to corner, at least that was my experience, so take it for what it is worth.

"But, Bill," demanded Blackie, running true to form as an investigator, "why didn't you shoot the bear, like Mr. Herron asked you?"

"Why, say," replied the old scout earnestly, "didn't I tell you those women were as timid as jack rabbits? Well, I didn't shoot because *I did not want to make a noise and frighten them.*"



How Do They Do It?

By Romeyn P. Benjamin

DOING little things in a big way had made Jack Williams so popular that I suppose every man in the regiment knew him. He was a hospital apprentice, seventeen or eighteen years old, attached to the marines. Whenever a man fell out on a hike, Jack was always on hand to help him catch up with the outfit, and when in the midst of an advance, boys began to drop, the cry was always for Jack who with his kit of bandages and iodine could always be counted upon to be in the thickest of the fight. That was his job.

When we attacked at Soissons Jack was along as usual, cheery and smiling. We lined up on the edge of a great golden wheat field dotted with scarlet poppies. Every now and then bursts of bullets would come singing through us with thin painful whines, but no one minded them much, for thinking what was still to come.

It was a wonderful July day. The sky was deep blue. The sunlight was brilliant and struck daggers of light from the great line of fixed bayonets. Only Jack did not have a bayonet. Hospital apprentices did not carry arms—only their kit of bandages and iodine. They went over with the front line just the same. It took nerve.

The word came to go. We waded through that golden field and then through another for two and a half miles. Many boys fell and were hidden. Jack was kept very busy. Many times I thought he was done for, especially the time when a bursting shell threw him, but he always managed to keep going.

When we were very close to the enemy we had to halt and lie down. We had so few men left it would have been folly to press on. Jack ran from man to man, continually exposing himself to a heavy machine gun fire, dressing wounds.

Suddenly something tore a hole in my leg. It happened so quickly it did not hurt much, only felt strange and numb.

"Jack!" That was my first cry. In an instant he was beside me cutting my trousers leg and bandaging the wound. He looked pale and tired and hot but he grinned just the same. Grinned while bullets whined past him!

"Jack!" The call came from the right.

"Well, I'm off," he said. But before he stood up to hurry to the boy who had called, he slipped the Red Cross band from his right arm and put it on his left.

"What are you doing that for?" I asked.

"Well," he said, "when I go down here to the right, my left side will be towards Heinie. My chance of getting through may be better if they see the Red Cross."

There was nothing theatrical in his manner, he was making no grand stand play. A wounded chap had called him and he was answering the call at the same time taking what little precaution was possible in order to save himself to carry on his work. "Good luck, Jack, and thanks!" We shook hands.

"Oh! that's all right!" he smiled. Then he got up, took about two steps and fell dead. It was too thick for even a Red Cross man to get through.

I suppose there were hundreds of others like Jack, boys who played their parts superlatively well, who smiled and then "went west." We have heard of lots of them. Was it the war that made these boys what they were, or did they always possess the qualities which go into the making of an all American fellow? The war did not do it. The war was simply the medium through which they developed. Boys like Jack have certain qualities in them which, when given half a chance, will make heroes of them, or great scholars, or musicians, or real men in any of the walks of life in which real men walk.

Of course during the war these qualities, such as ambition, pluck, stick-to-it-iveness, and determination to do one's duty no matter what it is, exhibited themselves under circumstances which are hardly likely to be repeated very soon. What then about all the boys who were not old enough during the war to go over seas? What chance have *they* to show what they are made of?

Well, here is the answer in another question. What do you like to do best? Perhaps you like to go camping or hunting, or perhaps play baseball or some other sport, only that sort of thing does not count. Jack probably liked those things too, but when he went into the service he signed up as a hospital apprentice. Decide on what you really are going to do and then set out to do it with all the pep you put into a game of ball, with all the patience you show when you build a fire with wet wood, and with all the cheerful bravery and devotion that Jack showed when he went over at Soissons.

It can be done. Other boys have done it. Boys no different from you. A lot of them are not eighteen, nor seventeen, nor sixteen, nor even fifteen! There's a boy at Columbia College now who is only twelve years old and he already knows twelve languages—one for every year of his age! And then there is Robert Murray who is also only twelve and who is said to have the most wonderful voice that has ever been heard. Samuel Rzeszewski is nine years old and plays twenty games of chess all at the same time, and he wins them too. So the list goes on.

Edward Roche Hardy has been a student practically since his birth and says that he prefers study to anything else and almost grudges the time necessary for sleeping and eating. I am not sure about this last statement though, because I recently had luncheon with him and I have never in my life seen a boy of twelve eat as much as young Hardy managed to put away! When I met him he had just come from the pool where he had been having a swim before luncheon. Perhaps that was what gave him his appetite! He passed both freshman and sophomore swimming tests when he entered Columbia.

Edward is the son of highly educated and intelligent parents. He learned to speak four languages at once when a baby, at the time when an ordinary child learns to speak his native tongue. Instead of lisping "Papa" and "Mama" like an ordinary American child, young Hardy learned English, Italian, French, and Ger-

man words all at the same time, so that when he was two years old he spoke all four equally well. Of course he got them all mixed up because he did not know one language from another, but after a while he was able to separate them. When he was five he started to learn Hebrew and took up Latin at the age of seven and Greek a year later. Since that time he has mastered Arabic, Spanish, Portuguese, Syrian and Armenian! What he is going to do with so many languages I am sure I do not know, but at any rate it shows pretty well what a fellow can do when he wants to. Languages and history are his favorite studies, but since he is determined to have a general education he has mastered algebra, geometry, trigonometry, calculus, and astronomy! It would seem as though all of this should be quite enough to keep a fellow pretty busy, but besides the above he has learned to play the piano, harp and violin! Then one day he went to New York University and took the scoutmaster's course, passing his examination with one hundred per cent!

"I am particularly interested in History, both Ancient and Modern," says Edward; "that accounts for my having learned as many languages as is possible, since one cannot hope to understand the history of a nation unless one understands its language." When asked whether he thought any boy could accomplish what he has accomplished, he said: "Yes, I believe so; provided that he likes to study. He can, of course, be made to learn, but no one can accomplish anything with very great success unless his whole heart is in it."

There is no question but that Edward is a perfectly normal boy, but one who, since earliest childhood, has been put through what might be styled an intensive course of educational training. What one becomes conscious of in his first meeting with Edward is his wonderful command of English. He speaks with an ease of expression that would be surprising in a man many years his senior.

Robert Murray sings—sings like a bird. Musical experts have said that this twelve year old boy has the most marvelous voice that has ever come from a human throat. Recently he reached a note higher than anyone has ever been able to reach before. Robert's range covers three octaves; that is twenty-four notes. The usual range is about two octaves. He has always loved music and being a lad possessed of those qualities which make for success he started in to work very early in the game and by persistent hard work and lots of enthusiasm he is well on the way towards making a big name for himself. Appearances to the contrary notwithstanding, singing is no easy job. It is very difficult and requires lots of study and practice. Even Caruso practiced almost every day.

Then there is Samuel Rzeszewski, the nine year old Polish chess master. Here is a boy who about three years ago learned the various moves in chess by watching other people play. Since that time he has lived, breathed, and thought nothing but chess. He has concentrated all of his mental forces on the intricacies of the game and has mastered whole libraries on "openings" and their variations, so that he knows them by heart.

As the variations possible in the game of chess run into the millions, and as each of these moves calls for a certain answering move, you can perhaps realize what a tremendous lot of study is necessary before one can claim to be a master of the game. Of course no one could possibly remember all the moves and all of the answers, but the man who can remember the greatest number will always win in the end. A little while ago Samuel went up to West Point, where he played twenty games all

at the same time and won all but one game which was a draw. He says that he believes that anyone of normal intelligence who is sufficiently interested in chess to undertake the necessary study and training can duplicate his work.

Jack went to France as hospital apprentice. He wanted to be a good hospital apprentice—the best possible. I guess you will agree with me that he succeeded. Hardy wanted to be a student. He wanted to learn things. He has had to work hard, but he has made good. Robert Murray wanted to sing—not just yell around the way most of us do, but really sing. Now look at him! Rzeszewski loved chess. At nine years of age he wins games from masters!

How do they do it? By wanting to do so earnestly enough, and then going after it hard enough! That is the whole secret! Of course, if you have no hands it would be foolish to try to learn to play the piano. Equally, if you have no voice it would be a waste of time to try to sing. You couldn't succeed. But if you have ambition enough and nerve enough and are willing to work as hard as you play and with the same dauntless enthusiasm, then you are equipped to follow the lead of Jack Williams, Edward Hardy, Samuel Rzeszewki, Robert Murray, and the rest of the boys who have made big names for themselves.

Don't be afraid there will not be room for you at the top. The top is the only place where there *is* room. It's always terribly crowded at the bottom! Sometimes people get crushed in the crowd. You never get crushed at the top. Do not let anything discourage you. Are you still in the crowd? Get out of it! Climb up!

Your Scout Knife

THE small blade of your pocket knife is a relic of olden times, that has been retained although the small blade is no more so universally required. The pocket knife with the spring action is really only of most recent origin as periods count in history. It was conceived during the eighteenth century. Before that only rigid knives were used and our historians have proved that iron or steel bladed knives of this character have been in use as far as historical knowledge stretches back into the ages. The first knives employed by human beings were knives made from stone. These are still found in the so-called pre-historic settlements.

The small blade of the modern knife originally was used for the purpose of cutting the nibs in quill pens. For this work very sharp knives made from the best steel were required. These were ground as fine as are ground to-day the best razor blades. Such knives were still in use during the beginning of the last century and are made even at the present time for artists who need a very sharp knife for pointing pencils.

Scout knives carry as a rule, besides the two blades, a few useful implements attached. A can opener, a file, or a saw, come very handy when camping and add much to the usefulness of a pocket knife. In former years cutlery makers glorified in making pockets knives embracing a great variety of blades and a corresponding number of implements. A dozen and more blades were joined to the knife and with it went a saw, a nail cleaning outfit, a file, a corkscrew, a horse shoe cleaner, a cartridge thrower, scissors and many other articles of more or less doubtful use.

Pops of Popular Science

By Francis A. Collins



Solar Watch Tower

A NEW solar watch tower is being built by the Smithsonian Institute in the Hala Mountains in the Arizona desert from which great things are expected. In this region the sun shines from a cloudless sky almost every day in the year so that daily observations may be made of the amount of solar radiation. This information will make it possible to forecast the weather and the temperature more accurately than ever before. The same institution has for some time maintained a similar station at Calama, Chili, where conditions are especially favorable for such observations. The Weather Bureau of Argentine has received daily telegraphic reports from the Chili station and as a result has enjoyed remarkably accurate weather forecasts, as well as advance information as to the amount of rainfall. By combining the observations made in Chili and Arizona the weather prophet expects to greatly increase the accuracy of his forecasts.

The Hydrophone

All danger from heavy fogs which have been the terror of seamen in all ages is ended it is believed by the invention of the hydrophone. In a series of tests made with ships of the Navy it has been found that signals may now be sent under water for more than forty miles. It is not only possible for a ship equipped with the new device to tell its exact distance from land, but the presence of other ships may be detected in plenty of time to avoid collision, and even the depth of the water may be measured. The apparatus consists of a tank placed on the keel of the ship, about three feet deep and twenty feet long, which is filled with water. A sensitive recording device picks up the vibrations sent under the sea. This is in turn connected with a device, called the compensator, on the ship's bridge which indicates the direction in which the sound travels. A submarine recently made a long trip under water guided past all dangerous points and kept

in the proper channel entirely by means of the hydrophone.

The Secret of the Firefly

Fame and fortune await the scientist who discovers the secret of the familiar firefly or lightning bug. No one has been able to tell how the little insect produces the flashes of light we see twinkling about us on dark nights. Careful scientific tests have proven, however, that this light is produced with about one four hundredths part of the energy which is expended in the flame of a candle. Considering the strength or rather feebleness of the firefly this light is believed to be the most efficient form of illumination known to-day. If this method could be understood and put to work it is calculated that the energy exerted by a boy in driving a bicycle would be sufficient to run a powerful dynamo or light miles of street lamps. The light of the firefly is practically heatless and it is believed among scientists that the future of the lighting industry of the world depends upon the discovery of a heatless light.

The Smallest Camera

The smallest camera in the world which has actually "taken" pictures is doubtless the eye of the frog. It has been found that if a frog is kept in the dark for some time the retina of the eye on being dissected is found to have a purple reddish color which fades away or becomes bleached on exposure to daylight. If the eye be placed in front of a window and left there or "exposed" for some time, and then fixed in a four per cent solution of alum the optogram is partially fixed and retains an inverted picture of the window with its cross bars as pictured on the retina. It is claimed that by a similar photographic process the last picture or image retained by the eye of a dead man or animal may be preserved.

Tall Buildings Cause Winds

You may learn many interesting things about air currents and the way storms develop by watching the movement of pieces of paper, or perhaps your hat, as it is whirled about the street. A variety of miniature wind storms are developed by the high buildings of our cities or the forms of streets, which well repay careful study. On a hot day even when the air is perfectly quiet the atmosphere, as it becomes heated tends to rise against the sides of rocks or buildings, and if it travels far enough will develop in a strong wind, which descends on the opposite side and plays queer pranks. A small whirlwind is often produced by the action of wind against a corner formed by several buildings. As the wind travels down a street again, especially a narrow one, it rapidly increases in velocity. A little will spill into the side streets, but the main stream will flow on gathering momentum. Watch the wind strike against the side of a high building and notice how it mushrooms out on all sides, splitting into many air currents and trace these till they come to rest, but be sure to hold tightly to your hat in the meantime.

Weather Wireless

The approach of storms at sea is now reported with surprising accuracy by means of wireless electricity. An ingenious device makes it possible to pick up news of their approach long before local conditions are effected. It is not only possible to learn of the position of storms when many miles distant, but to know the direction they are taking. The tests have been made

with great success at the Naval base at Pensacola, Florida. It is a simple matter to get news of the approach of storms over land, but the conditions at sea have been baffling. The warning of an approaching storm can now be wirelessed to aviators flying at sea and to ships far from land. Since ships far out at sea may now be warned of bad weather, a new element of safety is lent to all who go down to the sea in ships.

Anticipating Earthquakes

The slightest vibration of the earth is observed nowadays and watched with anxious attention. Several observatories in the United States recently noticed earthquake shocks which it would seem occurred several thousand miles away. Some of the instruments indicated that the earthquake was twenty-eight hundred miles away. A dispatch next day reported a violent earthquake in China six thousand miles distant. It is an interesting problem whether the American instruments reported the Chinese earthquake or still another. Interesting discussions followed as to the whereabouts of the "lost" earthquake. The incident has served to call attention to the fact that the slightest tremor even in the remotest part of the earth is instantly recorded.

The Electrocardiograph

The quickening of the heart beats caused by smoking a cigarette may be instantly recorded by means of the electrocardiograph. No movement of the heart is too slight to escape it. The new instrument is one of the most delicate ever constructed for the purpose. When certain muscles of the heart contract they serve to generate a very small electric current, which varies with the movement of the heart. It is by recording these fluctuations that the exact effect of the cigarette is recorded. In the instrument a fine thread of quartz is suspended between the poles of electric magnets. The shadow of this quartz as it vibrates is recorded by a delicate device upon a photographic film.

Movies by Wire

Motion pictures are to be sent by wire. The name of the marvelous apparatus is the "Telecinematograph." The American boy who has shortened the long word cinematograph to "movies" will probably find an equally expressive word for the new apparatus. Photographs are now being sent daily by wire for hundreds of miles and it is believed the telegraphic transmission of moving pictures will soon be a commonplace. The method is the discovery of a Frenchman. It consists of a cylinder with minute grooves only 1/20 of a millimeter in size controlled by much complicated electric apparatus. By this it will be possible to take a movie in London, for example, and watch its reproduction a few minutes later in American cities.

Photographs by Cable

Photographs have been successfully cabled across the Atlantic. The first pictures actually transmitted were probably those taken in New York of the 1920 international yacht race and reproduced a few hours later in a London newspaper. There are several methods of transmitting photographs by wire and even by wireless electricity, but the system followed in cabling the yacht pictures is probably the best. The negative containing the photograph is "coded," or prepared for transmission by an ingenious device which reduces the picture to an arrangement of messages which resemble an ordinary cable

code and can be transmitted as such. The message can be handed into a telegraph office for transmission like any ordinary message. On being received on the other side of the Atlantic this message is placed in a machine resembling an ordinary typewriter and is in turn reproduced by a series of holes in a long tape. The tape is then placed in the reproducing machine with an undeveloped plate and after being transmitted the plate is placed in a developing bath which reproduces the original picture in every detail. Some details are lost in the sending, but it is promised that the machine will soon be perfected and long distance transmission of photographs will be a commonplace.

Measuring Stars

An American astronomer, Professor Michaelson, has now made the most important contribution to astronomy, it is said, since Galileo. He has perfected a device for measuring the diameter of stars, which is considered by scientists a stupendous achievement. His device was first applied to measure the distant star Betelgeuse, with amazing results. It was the first time that the actual diameter of a remote star has been thus measured. Observations show that this star has a diameter one hundred times that of the sun, and is twenty-seven million times as great as the sun. The distance of this star from the earth is one hundred fifty "light years," or the time it would take for light to travel, moving at a rate of one hundred eighty-six miles a second.

Internal Heat as Energy

The scarcity of coal is stimulating the search for other sources of heat and power. Much has been heard of "white coal" or the ingenious use of water power. In Italy they have hit upon another plan which promises to revolutionize the industry of the country. There are several places in Italy where the internal heat of the earth comes so near the surface that it may be tapped. In other words, the volcanoes are being harnessed to supply power. The tests already carried on are reported to have proved very successful and the work will doubtless be greatly extended. The heat thus drawn from the earth is converted into electric energy which is transmitted for great distances and employed to run railroads and operate mills. There is practically an inexhaustible supply of heat or power and it is believed that the pressing coal problem of Italy will eventually be solved.

The Helicopter

It is by no means certain that the successful air craft of the future will be the familiar aëroplane or even the dirigible balloon. Some aëronautic experts believe that the commercial air craft of the future will be some form of helicopter. Quite recently a noted inventor, Peter Cooper Hewitt, has succeeded in building a helicopter which has actually risen from the ground and carried a man along with it and flown for a distance of one hundred yards. Small models of this form have been made in the past both in America and Europe, but this is believed to be the first which has actually carried a passenger. The first railroad locomotives and steamboats, it will be recalled, were built on very different principles than the models which finally were adopted, and it is within the range of possibilities that the same will prove true of the flying craft. A wonderful opportunity for invention is thus opened to our ingenuity.

Pops of Popular Science

Seeing by Electricity

A marvelous invention which it is believed makes it possible to see by electricity and transmit actual living scenes is announced by well known English scientists. It is claimed that a long series of experiments in photographing sound waves has proved successful, which makes such transmission possible not only by wire but by radio. The inventor of the new process, H. Grindell Matthews, claims that by means of his new device he can instantly transmit sight for considerable distances thus reproducing a scene miles away. In other words we may soon watch "movies" of actual events just as they transpire. A great parade for instance, could be reproduced by wireless electricity before one's eyes at the same moment it was passing a point miles distant.

Measuring Our Universe

Astronomers are inclined to believe that our universe with its 3,000,000 stars is after all but a part of space and that other universes may lie beyond. Attempts have been made to measure the size of the so-called universe, but opinions differ very widely as to its dimensions. It is difficult to measure it by using so small a unit of measure as a mile. If we take the speed of light which travels 186,000 miles in a single second, for comparison we will begin to gain some faint idea of the dimensions. Light speeding along at this rate will travel in an hour 669,660,000 miles. It is estimated that it would take light 30,000 years to travel across this space. Some astronomers even believe that it would take ten times as long or 300,000 light years. The mind can scarcely grasp the idea that beyond this universe lie even greater voids.

A Chemical Eye

A "chemical eye" has been invented which instantly detects rays of light invisible to the naked eye. The discovery is the result of war experience, which was only perfected after the armistice. There are many ultra-violet rays invisible to the naked eye which may be used for signaling purposes, for instance, which are only visible to the chemical eye. A battleship, an aëroplane, or an army on land, could use these rays for signaling, when they will be invisible to the enemy who could not employ a chemical eye. These lights could be used again in pointing out landing fields for aëroplanes. An enemy aëroplane, not equipped with a chemical eye, would not detect them whereas the aëroplane properly equipped would find sufficient illumination to make a landing with safety.

Farming by Electricity

Electricity is used to-day to perform 125 different kinds of chores on the farm. A few years ago electricity was only used in the country for lighting, but every day finds some new application. There are, for instance, more than thirty different kinds of farm machinery being operated electrically. Grain is thrashed by electric machinery, feed is ground, food for the live stock is cut and mixed, hay is hoisted into the barns and even the clover is hulled in this way. The up-to-date churn is run by electricity, even the incubator is heated and the chickens hatched out by the same mysterious power. The farmer of the future may find all the drudgery of farm work done away with and instead of laboring for long hours can do the work quickly and well by merely turning on a switch. We hear a great deal nowadays about boys leaving the farm to go to the city. The

Government is trying to teach farmers to use electriciity and keep the boys at home.

Aëroplane Night Flying

Night flying has always been an extra hazardous undertaking because of the danger of landing. Many casualties followed attempts to come to earth. The danger was somewhat lessened by lighting up the landing field with searchlights, but this has proven very expensive and not wholly satisfactory. The problem seems to have been solved by an American aviator who carries the means of illumination on his own plane. The test recently made on Long Island was witnessed by aviation experts of the American and British armies and pronounced a great success. The airman attached a number of magnesium flares to the edges of the wings of his plane, which were electrically connected, so that they could be set off from the pilot's seat. A series of mirrors was attached to the under side of the planes to reflect the light downward upon the field. It is expected that the new plan will safeguard night landing and have a stimulating effect on cross-country flying.

Splitting the Atom

Great efforts are being made to split the atom. An ingenious method has been devised which consists in bombarding nitrogen with atoms of helium and watching the results caused by the collision. When a particle of helium strikes the nitrogen atom the latter is decomposed and a portion is liberated which is made visible on a screen. The work of observing this operation is so wearisome that no one can watch them for more than an hour a day. If an atom is successfully split, a revolution will follow in science. It is already possible to decompose atoms of some elements. Perhaps some day far in the future it will be possible to split atoms of gold and other metals, thus realizing the dream of the alchemists of turning one metal into another.

Largest Wooden Railway Trestle

In western Canada is to be found the world's largest wooden, railway trestle. It is constructed of Douglas fir, known among timber men as the "imperishable lumber," and is so built that it withstands the traffic of the largest transcontinental railway trains. The trestle is 140 feet in height and nearly a quarter of a mile in length, across a canyon which is wider at the top than at the bottom. It is estimated that it would cost nearly a million dollars at the present prices for labor and lumber. It has proved serviceable to the railroad for 21 years, and seemingly, is good for a like service in the future.

"Pain Points"

On every human body there are four million "pain points" connected by nerves with the brain. They are, of course, distributed very unevenly. They are placed closest together at the tips of the fingers and are furthest apart in the back. Anyone can test this for himself. If you will place two needles one quarter of an inch apart by sticking them in a piece of card board you will have a very effective instrument for making tests. Put your finger on these two points and you will, of course, feel both of them. Now apply them to the small of your back and you will feel but one point. In other words, the nerve centers in your back at this point are more than a quarter of an inch apart.

Brothers of the Wild

By Lee Willenborg

IN the dimness of early dawn, the figures of the two boys could not have been distinguished except by the keenest eye. They moved through the alder swamp, along a faintly marked trail, with as much caution as wild things. Indeed, in spite of their youth—Jimmy Barrow was fifteen, Tom Hardwick a year older—their knowledge of woodcraft was remarkable. From time to time they would pause and listen, their eyes turned upward. In that uncertain light, their ears were more efficient servants than their eyes. Then they would resume their progress, drifting along single file, like gray ghosts, and almost as noiseless. At the edge of the alders, where the ooze was covered with a grayish-yellow growth of marsh grass, they stopped.

"They'll be coming now any minute," said Tom in a voice just above a whisper.

Jimmy turned his face toward the east—where the faint glow of light was beginning to take on delicate washes of pinky-orange—and nodded.

They sat down on the decaying trunk of a long-dead water maple. In the absolute silence the waking noises of the wild things began to be more apparent. Sleepy birds twittered; a twig snapped. Back in the fastnesses of the swamp a fox barked. And the far-off laughter of a loon came to them from a distant lake.

"Might have done better to try Fox Lake," said Jimmy. " That's where that loon is that just laughed."

"I figure our best chance is here," Tom answered. "There's too much wooded bank around Fox Lake."

For another moment there was silence. Then, far off but distinct, came a "Honka-honka - honk - honk - honka." The boys strained their eyes toward the southern horizon whence the stars had paled before the coming dawn. Again came the wildly musical calling: "Honk-honka-honk-honk." It was much nearer this time. A faint V-shaped line was just visible in the southern sky; it grew swiftly clearer and larger. The boys dropped behind the windfall, only the tops of their heads and eyes showing over it.

They had scarcely settled themselves when the wild geese—the makers of these wild bugling calls—began a swift spiral descent. In another moment, the entire flock had settled, with loud splashings, upon the placid water of the alder-swamp. For fully fifteen minutes they sat, moveless as if carved out of wood. Then gradually they began to feed, their long black necks thrust downward, their beaks feeling in the soft ooze for the wild-celery bulbs that grew thickly on the bottom of the swamp. Tom and Jimmy watched them closely. There were fifteen geese almost evenly divided as to sex. The wild goose mates for life; and even now, with the sub-arctic mating grounds still a thousand miles away, the young birds were beginning to show preferences. To the unskilled eye, they were simply a flock of wild geese feeding; but to Tom and Jimmy the mating preliminaries of the young birds were very

apparent. The sun was up now, and slowly the feeding geese began to work toward a dense patch of dead bulrushes. The guttural noises of their feeding ceased and Alder Swamp settled down to its habitual quiet.

Tom and Jimmy arose from their shelter and drifted off through the swamp. Not until they had covered a quarter of a mile did either of them speak.

"We ought to get some of that flock," said Jimmy.

Tom nodded thoughtfully.

"You know," he said, "it doesn't seem like good sense to shoot geese on the Spring flight." (These were the days before the Spring Migratory Bird Laws.)

Jimmy said nothing.

"Every bird shot now means two or three less next Fall," Tom explained.

"What do you want to do?" asked Jimmy. "Catch them alive?"

"Fine chance catching any of those fellows alive," answered Tom.

For another mile they plodded along over the rough wilderness road. At the first crossroad, Tom turned off. Jimmy slowed up but didn't stop.

"Meet you here at four o'clock," he said. "Going to bring your gun?" This last with a kidding sort of tone.

"Sure," answered Tom, grinning.

"But I'm not sure I'll use it," he added to himself.

Four o'clock came, and true to his word Tom was there gun in hand, as Jimmy came striding along. Tom fell into step beside him after a brief greeting. Country boys do not, as a rule, think any further nor faster than city boys. But they talk less. It was half-past four when they threaded their way through the alders and reached the windfall that had hidden them earlier in the day. The chances for the geese to pass within gunshot of their shelter were better than even. The sun was getting lower; it would set within the hour. The air was cooling, with a chillness that bit a little. But to Tom and Jimmy that meant no discomfort. Crouched in easy attitudes, they waited, their eyes fastened on the bed of bulrushes that, they felt certain, sheltered the migrating geese. The sun set, and sank below the horizon; still no movement from the rushes.

"D'you suppose something frightened them off during the early afternoon?" Jimmy asked.

"Look!" said Tom in answer.

The tops of the bulrushes began to wave here and there. The flock appeared almost simultaneously. As soon as they cleared the rushes they began—at a signal from the old gander who led them, which they understood perfectly, but which no human has ever been keen enough to detect—the preliminary rush for flight, wings beating, feet paddling. Tom raised his gun to "ready." The flock cleared the water, and bore straight for the windfall. They were less than fifty yards away and coming fast. Tom had his bird picked out; the gun rose to his shoulder. Then Jimmy reached over and forced the barrel down. Tom glanced quickly at him. Jimmy was pointing toward the rushes. For a few seconds both boys watched. By this time the flock had passed over their heads. But not the whole flock. There, where Jimmy had pointed, was a single pair, close together. They made queer noises and touched beaks, and dipped their necks. They paid no attention to the disappearing flock, now a mere V-shaped speck near the northern horizon.

"They've mated and are going to raise their family here," said Jimmy.

"You're right," Tom answered, "then what?"

"We'll steal their first clutch of eggs," Jimmy explained, "if we're lucky enough

to find 'em. That won't bother them much because they'll get busy and lay and brood another nestful."

"And you plan to hatch the eggs under a barnyard goose?" questioned Tom.

"Yeh," said Jimmy.

"But they're not as good for meat as the tame goose," Tom remarked.

"Oh, I don't care anything about *that*," Jimmy answered. "If we can raise only one of these wild fellows and train him for a decoy, think of the shooting we'll have!"

"Gee!" said Tom, "I believe you're right!"

Alder Swamp was really a backwater from the river that flowed by about three-quarters of a mile to the west. When the river, heavy with the Spring freshets overflowed its banks, Alder Swamp was mostly water. But as the dryness of midsummer came on, the connecting water dried up, leaving Alder Swamp a more or less muddy hole with stretches of clear water here and there. It was a paradise for mink, raccoon and rabbit—at different seasons of the year. If the summer was a wet one, the raccoons found it a pleasant place; it made the frogs plentiful. If dry, it was ideal for rabbit shelter.

But wet or dry it was always satisfactory to a certain surly old mink. He loved to hunt muskrats in their drowned galleries; but he really enjoyed wild-duck eggs more. Of course, this was accompanied with some risk. He was a bloodthirsty old scoundrel, but his courage was unquestionable. So, one morning some two weeks after the visit of the wild geese—who had left two of their number behind—this old mink was foraging along the water's edge.

He was not particularly hungry, and was poking his sharp triangular head about through the weedy cover more in curiosity than anything else. Suddenly he spied what he took to be a brooding duck sitting motionless on her nest. He had never seen a wild goose; and, to do him justice, it probably would have made no difference to him if he had. With a snarl, he charged the brooding bird.

Usually one look at his snaky, malignant self scared a duck silly, and she beat a hasty retreat. But this bird refused to move. This puzzled the mink and within a foot or two of the nest he swerved aside in his charge. As he did so, a pair of half-opened mandibles hard as bone caught him alongside his cruel face and knocked him sprawling several feet away. With the swiftness of his kind, he recovered and charged a second time. Again the steel-like beak scored a furrow in his face dangerously near his right eye.

Prudence was burned out of his raging brain and he charged the third time. But the punishing beak met him before he could get a hold. The last blow stunned him, and before he could recover, another and yet another lightninglike jab descended on his unprotected head. Through the entire encounter, the goose had uttered a hoarse whistling sort of hiss. The gander, foraging nearby, heard it, and made haste toward the nest.

The mink was dead; but the gander took no chances. The goose sank back on the nest, and the gander proceeded to hammer the mink to a pulp. He gave over at last and indulged in a raucous outburst of squawking and flapped his strong wings. Then he settled down to preen himself with a methodical slowness, in queer contrast to his quick movements of a few moments before.

For a week Tom and Jimmy, sometimes alone, sometimes together, had craftily quartered the swamp, striving to locate the wild goose's nest. And it happened that there was a distant though interested spectator to the late affair with the mink. Tom guessed—he couldn't really see from that

distance—what was happening. And when he saw the flash of the gander's flapping wings, he was sure of it. He marked the spot on a rudely sketched map and faded away into the alders. Late that afternoon he and Jimmy made their way to the sheltered point and found the nest. This time the hissings and blows of the wild-geese were in vain; the boys bore off the eggs in triumph.

They were set under a placid and comfortable old goose. She hatched them and seemed in no sense worried at the slender build of the offspring. Their sharp, restless eyes and quick movements caused her no more concern than their olive-green down; to her they looked like proper enough goslings; so why worry? Tom and Jimmy were delighted; but in spite of their care, only two reached maturity. Weasels, rats and an impudent hawk accounted for the balance. One of them was apparently quite satisfied to throw in his lot with his domesticated cousins. But the other bred true to the wild. He was a restless bird, and though he mixed with the other fowls at feeding time, his leisure hours were spent away from the barnyard. He had a way of gazing up into the sky as if he hourly expected to see a high-flying wedge of his own people go honking by. Even before he shed his down, he would stretch his young wings and run, as if he were about to take flight.

"He's going to make a dandy, all right," said Jimmy admiringly.

"We'd best be clipping his wings," Tom remarked; "next thing we know he'll beat it."

But it was not until early in the autumn that Tom and Jimmy caught both birds and clipped the primaries of their right wings. It was soon after this, too, that each was provided with a light chain, fitted with a soft piece of buckskin that fastened around the leg. At the other end of this was a ten-foot chalk rope that ended in a slipnoose. This noose would be drawn tight to a sapling and that in turn would be shoved down into the oozy bottom of Alder Swamp. For several days the geese—or rather ganders, they were both finely marked males—were taken to Alder Swamp in the early morning and late afternoon. The placid one made no fuss and accepted his tether as a natural thing. He swam to the limit of it in every direction, ducking under every few feet and showing every evidence of delight.

But the wild brother swam to the end of his tether once and stopped. His fine black neck was pointed upward, watching for the voyaging flocks; he floated motionless on the quiet water. After this had been repeated a half dozen times, Jimmy remarked:

"He'll never call any wild geese; that's a cinch."

"Can't tell," answered Tom.

"And the other one is too lazy or a glutton or something," Jimmy went on. "A hundred flocks might go by and never a 'honk' out of him."

"Old pessimist!" Tom answered with a grin.

For an hour the boys lay in their shelter. The sun was down some thirty minutes and only the crimson afterglow remained. Jimmy got to his feet and Tom was about to follow when a faint far-off "honka-honk-honk" sounded across the evening sky. The young ganders looked up, the wilder one stretching his fine black neck. He had located the on-coming flock before the boys had found it. The wild geese were perhaps a half mile high, and moving fast, when the wilder gander, whom Jimmy had christened "Restless Roy," raised himself on the water and beat his wings. His glad "honk-honk-honk" of welcome reached the wise old gander at the head of the flock. Downward, in a steep, curv-

ing drop, they came; and in less than a minute the water was covered with the voyaging geese. Roy was wild with delight; nodding and bobbing his black, white-cheeked head, and uttering queer babbling noises. For a moment the flock remained motionless; then they began to feed. Jimmy's prophecy regarding the lazy gander had been right. He paid very little attention to the visiting flock; he seemed absorbed in diving for wild-celery bulbs. The flock kept moving, and soon Roy reached the end of his tether. He strained toward the receding flock; and something about him caught the old gander's attention. Whether he knew the sinister meaning of the chalk line that Roy's struggles brought to the surface or just made a shrewd guess, Jimmy and Tom could not decide. But with a suddenness that was surprising, the whole flock broke into action. A roaring of wings and a shower of splashings and they were off. Roy tried his best to follow; his broad wings beat desperately, and his black feet churned the water into foam. But the chalk line held fast and in a few seconds he dropped back with a single disconsolate "honk." He looked after the receding flock long after they had disappeared.

As the boys began hauling in the young ganders, preparatory to carrying them home, Jimmy said:

"He wanted to follow them," nodding at Roy.

"Of course," answered Tom. "That's natural enough."

"Old lazybones, here, didn't," Jimmy observed. "Visiting relatives mean nothing in his young life. Wonder why?"

Tom shrugged.

"Geese are like people in some ways," he remarked. "Some like their relations; some don't."

"Say, did you hear or see any signal from the old gander when the flock beat it?" asked Jimmy.

"No," answered Tom, "I didn't. My Uncle Ned has shot wild geese and wild ducks for years, and he's laid in a blind watching and studying 'em, hundreds of times. He's never yet caught a signal. Maybe they don't use any."

Almost every day for nearly a month Roy had been trying to fly. Most of these trials were made very early in the morning. He could rise and get considerable speed; but his balance was faulty. He was in constant fear of turning over, because of the clipped primaries of his right wing. After these trials, which he kept at until nearly exhausted, he would utter a "honk-honk" and look up into the lonely reaches of the morning sky, as if he expected his wild brothers to descend and help him.

The equinox was late that year. When it came, with high winds and lashing rain, Tom and Jimmy were ready. It rained and blew furiously during the night; the rain ceased at daybreak. But the sky was overcast with sullen low-hanging clouds, and fitful wind came in gusty squalls from the north. Each with a gun in one hand and a gander in the other, Jimmy and Tom were hurrying toward Alder Swamp.

At the same time a vagabond otter, straying southward from some distant lake or stream, was making a leisurely survey of Alder Swamp. From his observations he decided it was no great place; well enough for a day or two but not big enough to interest him very long. Rounding a tiny promontory of weeds, he came suddenly upon two young ganders. One seemed to be feeding; but the other might have been carved of wood, excepting for the ruffling of his feathers, where the fitful wind caught them. The otter settled down in the weeds noiselessly. Wild geese were nothing new in his life. As far as food went, he preferred fish. But, not having

eaten for at least four hours, he felt the need of food. It happened that the ganders were quite close together; "Lazybones," as usual, at the end of his tether and nearest the otter; Roy a few feet beyond. The otter marked the nearest bird and slipped noiselessly into the water. Suddenly Lazy-bones saw a long graceful form surge upward right beneath him. Just in time he jerked his long neck upward and with a squawk of fear paddled desperately away. The otter, his rush carrying him upward and beyond, reached the surface within a foot of Roy. Quick as his turn was, it was a fraction of a second slow. Roy's hard beak descended in a lightninglike jab. By the merest chance, it caught the marauding otter squarely in the ear. The pain stunned him. He thrashed feebly about on the surface of the water. Roy swam alongside and jabbed him twice more; then he felt himself being dragged backward, as Jimmy jerked on the chalk line. Within a minute, both birds had been towed ashore, and Tom waded out into the water and finished the otter with a piece of deadwood.

Jimmy was holding Roy and stroking his glossy feathers.

"Did you see the plucky beggar fight!" he exclaimed admiringly.

"He sure has got sand," said Tom throwing the carcass of the otter across a log. For a moment, the boys looked at each other. Something was happening to both of them.

"Better put them back in the water," said Tom finally. "The wild geese might happen along any minute."

"Not this gentleman," answered Jimmy decisively. After a second's pause, he added: "I've got to think a minute."

Tom put Lazybones into the water three times. Each time he swam quickly back and scrambled up the bank. The water had lost its charm.

"Got a real sharp knife?" asked Jimmy suddenly. Tom handed it over without a word.

"Catch hold of him," said Jimmy.

Together they held Roy, his left wing spread out on a log. With two or three deft cuts Jimmy snipped the primary feathers.

"Now let him down," Jimmy ordered.

He stooped over and cut the leather thong around the bird's ankle. Tom shook his head.

"I get your idea, I think," he said. "His trouble wasn't wing-spread, but lack of balance. You figure, if the left wing is clipped equally with the right one, he could fly."

"That's it exactly, Tom," answered Jimmy.

"He'll never hold the pace with a wild flock," Tom said doubtfully.

"Maybe not," admitted Jimmy, "but it's the best we can offer him; and we couldn't do less. I figure he's earned his freedom."

Tom nodded and together they crawled into shelter behind the log. For a long time, Roy stood quietly on the bank, his dark eyes scanning the cloudy sky. At last, the long-expected bugling of a migrating flock was heard. Roy waddled hurriedly down the bank and slipped into the water. Lazybones followed. The wild-geese descended to within a hundred feet of the water. Then, four appalling explosions issued from behind the log. Three geese left the flock and tumbled head over heels into the water. The geese broke with excited squawkings; swept upward and outward in a sharp curve.

"Look at Roy!" said Tom.

Feet and wings working desperately, Roy had left the water, and was flying straight after the vanishing flock. The boys watched him until he disappeared.

"Hope he makes out all right," said Jimmy.

"So do I," Tom answered, "though I doubt it. But there's one thing that's going to help him a lot."

"His pluck?" Jimmy questioned, and Tom nodded.

They gathered up the dead geese and the otter.

"Shall we turn Lazybones loose, too?" Jimmy asked.

"He'd come back to the barnyard if you did," Tommy answered. "He hasn't the heart that his brother Roy has. The 'wild-stuff' is too strong for him."

* * *

Again came the Springtime with its melting snows and swollen streams. The bugling music of the wild geese came across the soft chill of the evening air. Migrating flocks stopped for rest and food at Alder Swamp, and awoke the quiet with their splashings.

"There's a pair of wild geese nesting in Alder Swamp," said Jimmy one evening. "I was prowling around over there to-day and found the nest. Wonder if it could be old Restless Roy."

"Well," answered Tom, "I doubt it; but if it is, he's perfectly safe, as far as I'm concerned."

"Same here," said Jimmy.

And they looked at each other understandingly.

"There's Fun in the Woods"

By Tobias Martin Bray

Come out, boys, come out;
Get all the troop together,
The day is great and the sun is bright—
Say, it's October weather.

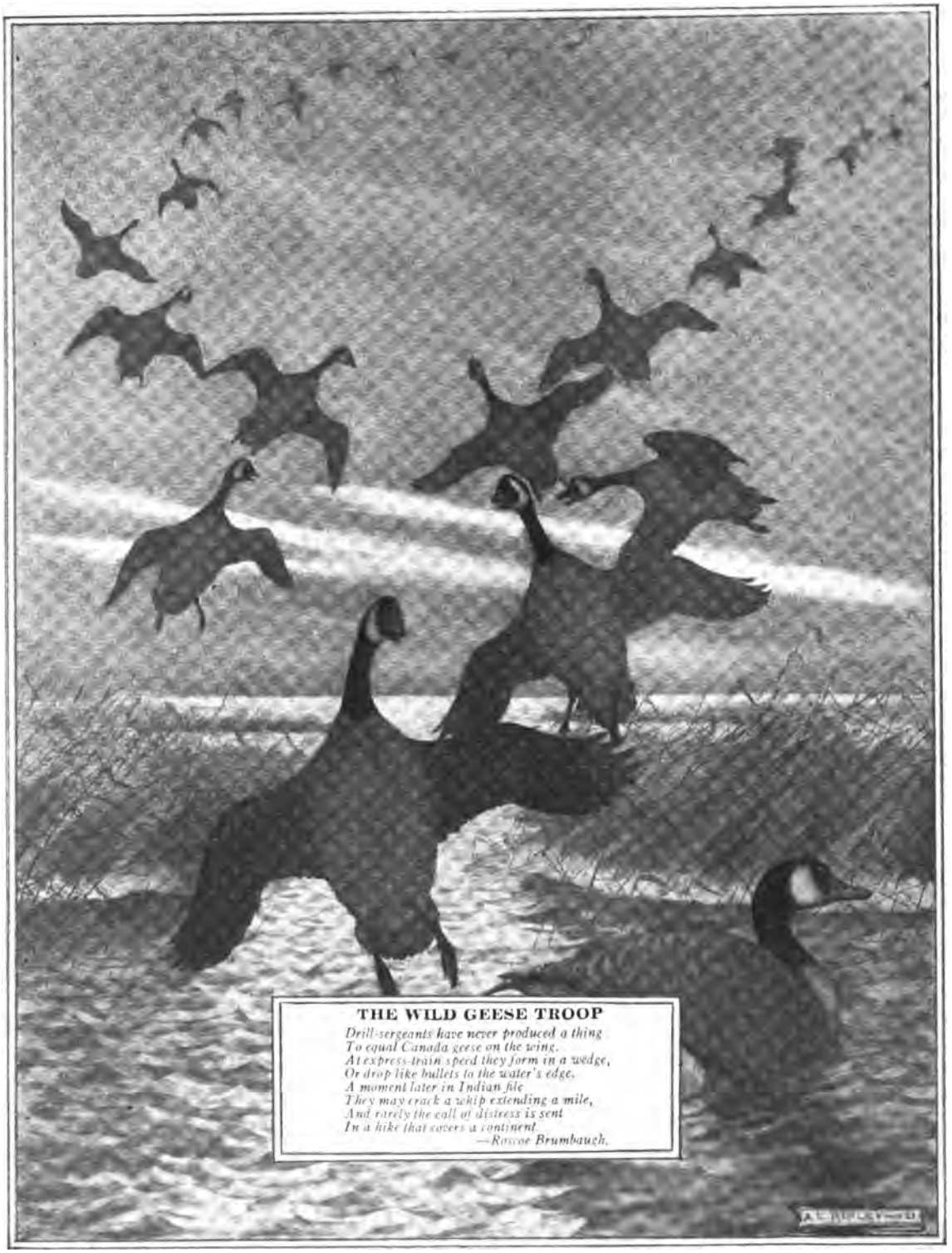
Buddy Jones—Go get him quick,
And Bill—there he's a-calling.
The burs have burst, the wind is high,
And the ripest ones are falling.

Hurry them up: get all the bunch
And bring them out—where's Joe?
Nuts on the ground are easy to get—
The sweetest the highest grow.

Scout or squirrel, which one will win?
It's the first one there that lands
But a squirrel's feet should never beat
A scout with his head and hands.

There's fun in the woods on a day like this:
Miss it? Who ever dreamed miss?
Nature's in love with the whole wide world,
For Winter gave her a kiss.

Come out, boys, come out,
It's a dandy sight to see
The colors that Nature has wrought
And splashed on every tree.



THE WILD GEESE TROOP

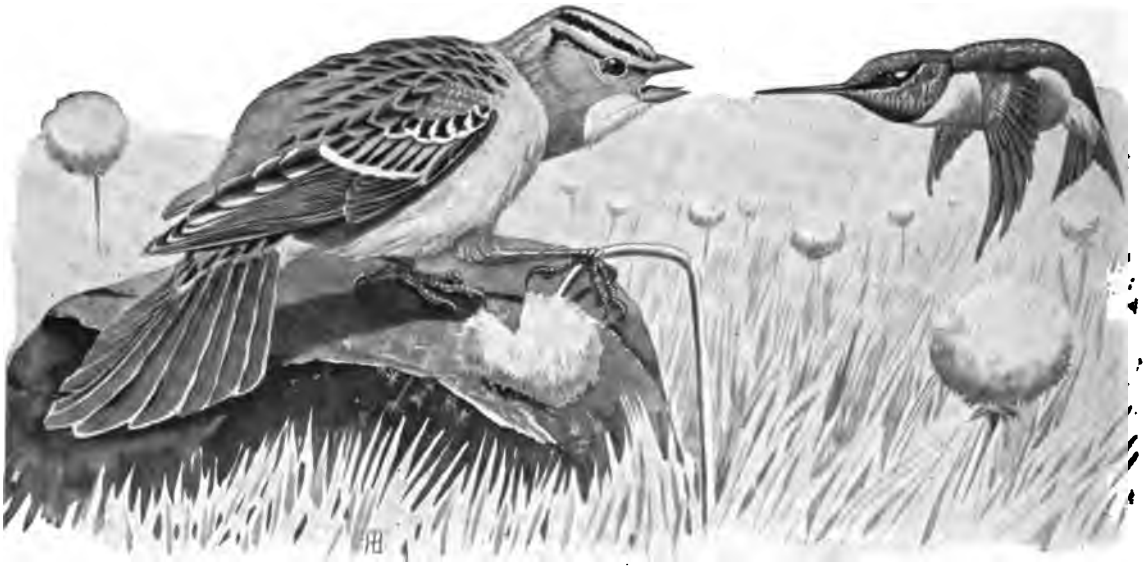
Drill-sergeants have never produced a thing
To equal Canada geese on the wing.
At express-train speed they form in a wedge,
Or drop like bullets to the water's edge.
A moment later in Indian file
They may crack a whip extending a mile,
And rarely the call of distress is sent
In a hike that covers a continent.

—Roscoe Brumbaugh.

A Gallant in Ruby and Gold

By R. I. Brasher

Illustrated by the Author



"Beat it! That's *mine*"

FORGET-ME-NOTS still tinted patches of meadow and saxifrage whitened open hillside spaces like belated snowbanks. May had come and again the orchard's southern slope was carmined with wild columbine. Around bases of old apple trees they clustered thickly—rings of soft flame undulating to the slightest breeze. One calm morning about the middle of the month my ears caught a sound like the whirring of tiny aëroplanes and a swaying group of flowers betrayed the cause—the Ruby-throat with gorget a deeper crimson and back a more vivid green than the blossoms and leaves he poised among. Suddenly dropping beneath a flower he slipped his bill perpendicularly into its cup, raised it horizontally and extracted the food within. The movement between flowers was almost too swift for the eye to follow but the method was the same in each case —the upright position changed to the more convenient horizontal—the extraction of the tiny mouthful, then away to the next one! Breakfast over he rested a few moments on an elderberry twig, then disappeared.

Some days later, while I was watching a tarrying White-throat feeding on a

globule of dandelion seed which he had pulled down by the simple expedient of hopping upon it, the same whirr of miniature machinery greeted him. The startled White-throat almost fell over backward as the green projectile dove swiftly forward and poised directly in front with bill pointed straight at him and tail lowered at right angles to his body. There may be some method of communication between birds—I don't know—but the newcomer's actions said plainly "Beat it! That's *mine!*" and the sparrow obeyed without any hesitation whatever.

Was it a spirit of perversity or mischief which prompted its adversary to covet that particular seed vessel? There were many other spherical elfin wands nearby. Perhaps it was innate pugnacity for this restless highspeed sprite always seemed to have a chip on his wing. A billful of the small thistlelike seeds was gathered in an instant, and away! but I had followed the direction—straight toward the house. Walking to the point where I had seen him last I soon discovered him again with another mouthful, this time disappearing around the house. This sortie gained fifty feet and his next appearance betrayed the secret. There it was, just commenced, on the lower branch of an apple tree within thirty feet of the porch and so located that I could look into it easily from an upper window. This was on the morning of May 20th.

There was no doubt as to the architect and superintendent of that structure. Sir Ruby did his share of the work in carrying material but Mrs. Ruby bossed the job. She attended to more than half the transportation, too, and refused point blank to allow him to place any of the spider's webs which bound on the carefully selected lichens ornamenting the exterior of the dwelling, although she did not refuse him permission to stick a few pieces on with saliva! As far as I could judge the lichens were gathered from the same tree and to pry off a particularly resistant bit they worked together. Usually the birds lit on the branch when gathering these decorations but twice I saw them pick a piece from a limb while flying. Although apparently eager to complete the home they varied the work by play and lovemaking, for the exuberance which pervaded these living sunbeams had to find more than one outlet. Suddenly Sir Ruby would swing off on the arc of a rising circle ten—yes, fifteen!—feet upward; then back past his admiring sweetheart perched on the edge of the nest, and up as far on the other side, her fascinated head turning to follow him through this pendulum movement. There was no similarity to a pendulum in speed however, for the maneuver was executed a dozen times with a celerity which taxed the vision to follow. The finish found him dropping alongside the object of his affections, as softly as a milkweed seed comes to rest. Who could ignore such a gallant charmer?—certainly not she!

In a little over two days the home was finished and no time was lost in moving in. On the third morning a peep through the binoculars revealed a tiny white egg almost exactly the shape and size of a bean, lying snugly in the downy bed. The next morning another reposed alongside and I caught Sir Ruby perched on the side of the nest looking, it seemed to me, somewhat mystified at the treasures. The so-called head of the Ruby-throat family has a very bad habit of losing all interest in subsequent proceedings, deserting his wife and home after, and sometimes before, the eggs are laid, so I fully expected this particular gallant to follow precedent and disappear.

While he lingered there, wondering what those two white objects could pos-

sibly mean, he was rudely awakened by a sudden dart of emerald driving straight at him. Did he turn and fly? No, indeed! Off he slid and up on the first dizzy turn of the courtship half circle, while she, from a point directly above the nest, slowly sank down on the eggs. Up and down he went a dozen times, always facing her as he went past the nest. Here was an interesting variation from the conventionally indifferent male Rubythroat, and thereafter every opportunity which offered found the glasses following the little pair. From a capable architect and builder Mrs. Emerald Rubythroat fell naturally into the role of an efficient New England housewife and like many of them after marriage, tolerated no more sentimental nonsense.

If sentiment was forbidden, fighting was not, so an air deadline was laid out and strictly enforced. Any living thing which wandered too close was summarily halted. Poor Mr. and Mrs. Phoebe with four youngsters under the woodshed were forced to make a wide detour via Chickenhouse Lane to reach home, and even this circuitous route was not always safe. The only exception to the traffic regulations was a pair of Red-eyed Vireos with their pendulous home on the opposite side of the same tree. They had commenced homebuilding operations a little before the humming birds and perhaps the latter recognized the law of priority or maybe it was a case of fellow bird feeling making them "wondrous kind."

One morning sudden outcries from the chickens brought me to the window, rifle in hand, for such a racket had only one meaning. A Cooper Hawk had made a dive, but the wires surrounding the yard spoiled the swoop and he lit on one of the fence posts to figure out a more effective plan of attack. Straight and nearly as swift as a bullet Sir Ruby shot at him. The hawk drew back his head with ruffled feathers and assumed a pose of "frightfulness" but it was no go—the attack became more vicious, more insistent and to "save his face," also his *eyes,* he dived for the woods, twisting and turning to escape the demon which followed with persistent jabs at the back of his head.

We had been losing chicks from Lady Jane's in the orchard for some days. I attributed this slaughter to the gentleman just defeated. That evening another chick was gone. Although a shy but persistent chicken thief, it did not seem probable that after his experiences of the afternoon the hawk would return the same day. I had been out of doors most of the time and heard no hawk tocsin sounded. At daylight next morning Sir Ruby suddenly left his sleeping perch just over the nest and darted into a clump of blackcap bushes at the end of the grape arbor. A series of short rushes and out sneaked a brindle cat. So that was the chicken thief! The .25 ended *his* career. We lost no more chicks.

One morning as I watched the evolutions of a male Marsh Hawk (a pair of which had bred every year in our valley) his gyrations—a gigantic imitation of Sir Ruby's half-circle amorous exhibitions—were suddenly brought to a halt by the onslaught of a Kingbird whose mate was at work on a nest in a nearby valley, the conqueror returning with elated twitterings of triumph to his vantage post near the nesting site. Alas, his victory was short-lived! for with an impetuosity which knows not discretion, Sir Ruby shot at him, and flight—ignominious flight—was the only alternative of the erstwhile hero.

Our spring is some distance up the hill, the water being brought down through a lead pipe into a barrel, the overflow falling on an old cherry log. My ablutions were sometimes performed here and frequently the fearless mite of a Rubythroat

would sit on the stump within two feet of my face while he tried the cold water running over his minute feet. However, it was too cool (averaging around 50°) for even his fervid nature to endure long, and after a few sips he was off and away for the day's adventures. This tiny fighting unit showed as little fear of me as he did of any other living thing: in fact it seemed that the larger the enemy the less hesitation he displayed in attack and although he gave me the "once over" (frequently poised within a foot of my face), evidently concluded I was not dangerous—my eyesight is as good as ever!

One morning this feathered atom was looking sideways up at me, the rising sun sparkling on his ruffled coat, bringing into life every facet of his bejeweled raiment, when another male hummingbird suddenly appeared—apparently from nowhere—and attempted to usurp the position on the log already occupied. A faint squeak (the only sound I ever heard him make)—a nebulous spiral spouted upward and disappeared among the maple leaves! The whole thing happened so quickly that I was almost inclined to believe I had imagined it. I never saw the intruder again.

I have been puzzled frequently by the actions of crows flying erratically with sudden dives and side swerves, with no apparent excuse for these acrobatic movements. One afternoon I saw a sable traveler about an eighth of a mile away going through one of these inexplicable performances. With aid of the glasses the mystery was solved. "Fighting Bob" was in pursuit, although he was invisible to the unaided eye.

A rail fence built over thirty years ago led from the Rubythroat's apple tree to a grove of hemlocks some hundred feet north. This had been a favorite runway for red squirrels and chipmunks but at the time of Rubythroat's arrival they were forced to make a detour. A red squirrel can move speedily on familiar fence roads (once I followed one for nearly half a mile, my horse was going at a fast trot while the little fellow carried a butternut, and he was still ahead when he turned the corner), but when Sir Ruby advanced to the attack—a tawny streak flashed along that rail road and disappeared into the dark green coniferous shadows.

The fiercest scrap of all took place nearly beneath the home tree at the end of this fence. I saw what at first appeared to be a venturesome red squirrel which had not been initiated into the fact that this particular chestnut highway was closed, come swiftly along its top. Halfway down he was met by an exploding shell, but continued forging ahead. The onslaught became more insistent, shells exploding more rapidly as he approached the sacred precincts, the final attack being delivered at the end of the fence directly beneath the apple tree. The diminutive warrior's feints and straight drives followed each other with the swiftness and regularity of machine guns, and at last the weasel—for it was one of these bloodthirsty little demons—could stand it no longer, but escaped into a friendly hole among the rocks. As far as my observation goes, the hummingbird is the only thing smaller than himself which has ever made this terror turn tail.

The dimensions of an intruder were not considered at all by Sir Ruby. A fat lazy woodchuck, sitting upright on his hind legs, calmly chewing a sprig of leaves and surrounded by an admiring circle of Leghorns, was informed in no uncertain manner that he was outside of his domain. He returned to his proper territory with an abruptness which scattered the hens in a wild flurry of cackling. Perhaps the sudden change from lethargy to action aroused

the suspicion that he was a fox in groundhog's fur!

To the chickens Ruby usually paid not the slightest attention—perhaps recognizing their domestic status and realizing that they did not fly high, but one adventurous hen who scrambled into the lower limbs of the home apple tree was requested to descend—which she did!

Nor was a vein of humor absent in this very interesting bird personality. A black beetle about three-quarters of an inch long had become entangled in some spider web strands and hung suspended from one of the grape vine slats. The hummer's quick eye saw the swaying victim struggling to climb up the elusive entangling threads. Darting forward he hit the captive a blow that sent him swinging to the top of the arc. Poising a few moments in midair while "the old cat died," the onset was continued from the other side. The helpless insect's swaying motions seemed to interest his tormentor greatly for he would shift from side to side, watching the momentum gradually lessen, then accelerate it by another blow until an extra hard tap broke the thread and released the object of his teasing.

To comprehend the motives which actuate birds or animals is, of course, impossible, but if ever a feathered form exhibited a clear spirit of mischief and amusement it was in this curious performance.

The length of time which Mrs. Rubythroat often remained off the nest was so extended that I commenced to think her hopes of progeny were doomed. Twice when I looked at the first peep of dawn (about 4.30) she was not there. She was frequently absent for a quarter hour and once she was gone for 31 minutes. The sixth day was cold and rainy, but she left the eggs exposed to the elements for about the same length of time as she did when the sun shone. The protector of the family made no attempt to occupy her place, always accompanying her when she left, although seldom returning in her society.

A glimpse into the thimble cup on the morning of the eleventh day revealed the youngsters—such tiny helpless things that it was difficult to believe they would ever acquire the dash and energy of their parents. The father was seen less frequently now; the art of feeding did not seem to be part of his abnormal gallantry. Three days after the children were born he disappeared and the cares of family life devolved entirely upon the more constant mother. Although I watched the extraordinary meal gymnastics many times, the fear that the youngsters would be stabbed to death when the mother inserted her awl-like bill down their throats never left me. One fact is certain—a fact which I have proved by measuring the length of the bill and length of the young birds—food was injected directly into their wee tummies. The joy of the epicure was not theirs unless the sense of taste is located in the aforesaid portion of their anatomy—a dire deprivation which always excited the lively sympathy of the Lady of our house whose ancestors must have been wont to linger long over flagons, stuffed swans and truffles.

In the morning of the twelfth day after hatching the nest was empty. It was about time, for the rapidly growing bodies had completely filled the small receptacle. It was a case of fly or fall out. The most persistent search failed to reveal their hiding place. The parents came at intervals, always alone, however, hovering around the nasturtiums or delving deep into the heart of the hollyhocks. Watching them at such time it was not difficult to believe that their progenitors were some form of reptilian life though they suggested more strongly in their iridescent scaly coats and

sinuous swift movements, a close affinity to the rainbow-tinted trout. In fact, when their bills were buried in the heart of flowers it required little imagination to believe they were tiny fish seeking a meal of insects.

While there is some truth in the popular belief that hummingbirds live on nectar, the fact is that they subsist largely on small insects captured by the viscid sweet within the corolla.

Early one morning in the latter part of August a faint splashing in the tiny brook running along one side of the garden attracted my attention. There was my friend of the springtime taking his morning bath, a performance which he thoroughly enjoyed. He had long ago forsaken his perch on the cherry log by the water barrel for the warmer water of the brook. Ablutions accomplished to his satisfaction, a spray of jewel weed was selected where drying out and preening were completed in a careful and artistic manner; each separate feather received attention and he spent fully twenty minutes in caring for and arranging his exquisite dress.

The sunlight fell warmly on the luxuriant growth of these graceful plants and the reunited family of four were frequently seen among the orange-colored blossoms. Sometimes a swiftly vibrating pinion would release one of the jewel-weed's sensitive pods, scattering the seeds and sending the bird into a sudden frightened swerve. The parents soon became accustomed to this bombardment but it always affected the youngsters' nerves.

This patch of warmly-tinted flowers became their favorite hunting ground. Here they could be found nearly every day until their final disappearance in September. Like Scarlet Tanagers, Rubythroats suggest the tropics and although the family numbers nearly five hundred species this bird is the only one venturing into the eastern states. "Hummingbirds, like poets, belong to the genus irritable," but are unlike them in the beauty of their raiment and in their ability to winter in the tropics!

Ant Engineer

IT has been found that the population of an ant hill has solved many complicated mining problems. Thousands of ants working instinctively perform miraculous engineering feats with amazing efficiency and without profiteering. Each ant finds its own work and the team work when big problems must be solved is surprisingly efficient. When one shift of workers tires or must stop for food or rest its place is taken by other workers equally skillful so that not a moment is lost. When an ant becomes covered with dirt others immediately clean it by washing and brushing. During their mining operations in digging holes and removing stones an ant is often injured, whereupon others rush to its assistance and carry it to a quieter gallery where first aid may be administered. The resourcefulness of these little engineers has been found to anticipate many of our recent efficiency methods.



"There's a puck of the knob to learn ye manners"

The Gordon Kid and the Leprechaun

By John R. Neill

Illustrated by the Author

THE genial and bracing spring air had at last begun to bring the boys out into the open country after a long winter that had kept some of the younger Boy Scouts cooped up in their homes.

Jim Warren and Alex Rutherford were older boys who had continued their outdoor life all through the severe weather and were returning from a scout meeting when they were passed on the street by a rather tall, lanky boy.

He was dressed in a new well fitting khaki suit; he had a book under his arm and a preoccupied look on his face.

"Say, Alex, did you ever see a kid grow like that Gordon Kid?" said Jim, turning round to see him from the back.

"Is that the Gordon Kid?" drawled Alex. "I'd a passed him on the street without knowing him at all, he certainly is changed. He is the one that the other boys used to josh about being the runt, isn't he?" Both boys stood staring at the retreating figure. "And now, look at him," said Jim. "By Jingo, he's bigger than the scoutmaster; who'd have expected it?"

Jim and Alex were still staring when the Gordon Kid turned the corner.

Now to get back to the Gordon Kid himself, for that is where the whole story lies. He always was a queer dick of a quiet dreamer with ideas and inventions that often brought more adventure and ridicule than anything else on his head.

The Gordon Kid and the Leprechaun

And because of his shortness he had been jibed, often severely, by the other boys of his patrol.

All this he took good-naturedly and usually managed to have enough to hand back to make him generally liked.

He had read more books than any of the other boys and often settled disputes from the store of information that he had tucked away. He was just the every-day sort of a boy, no different from the others, except the smart offensive type that are likely to pop up now and then.

It was a day or so after the previous Christmas that the incidents in this story occurred. Tom Gordon's mother had wanted to give Tom a new scout outfit and had asked his father to send it up for his Christmas present, but when it came and was tried on they found it was so big that Tom could not possibily use it.

The father, a tall good-looking man, only remarked that he knew the right size to get, and that he had been the same size as Tom when he was his age.

So the clothes were put away and nothing more was said, and Tom enjoyed the other gifts he received, notably a book of Irish Fairy Stories which he enjoyed more than his meals.

About this time he was getting tired of being bothered about his size and after some serious thinking, evolved an idea that he kept to himself and worked on all afternoon in the work shop.

That night, when he went to bed, he carried quietly upstairs a large bundle, which, when everyone else was asleep, he opened and spread on the bed.

An odd sort of harness he laid on the pillow. It was made of belts and rope and on the foot of the bed he put a pair of old shoes with ring-bolts securely screwed



It almost made Tom sick when he saw his foot grow across the room

on the soles, then two flat irons and some more rope, and the Irish Fairy book he put on the chair beside the bed.

It wasn't long after this that he was in his pajamas and had slipped the belts over his shoulders and put on the shoes with the two irons tied to the ring-bolts with the rope, dangling about four inches from the floor.

He smiled to himself after a lot of adjusting of the ropes at the head of the

bed where he tied himself fast and at the foot where he left plenty of free play.

The novelty of the situation made him grin.

Then he took up his book, read for a little while, and, becoming drowsy and feeling himself dozing off, put the book back on the chair, and shut out the electric light with a push button that he had under his pillow, and floated away in a sound sleep.

* * * * *

From then on everything changed for the Gordon Kid. A moment seemed years, and the few experiences that had occurred in his young life that had in any way been unusual seemed surging back, exaggerated and distorted with his whole small world turned upside down.

He sat up in bed, and his feet were free. Then he took up his book and tried to keep calm as he tried to read with the book on his knees.

But as he sat, the book began to grow larger until each page was three feet wide and seemed hollow, and way back in the distance there were trees growing and the wind seemed blowing up from the sea.

A faint whirring sounded far away and seemed to grow. The room was dark, except for the light that came from the pages of the book, but with the whirring the light grew brighter and Tom's hair tingled at the roots as he pushed the book to the floor and fairly gasped, now really frightened at the strangeness of it all.

Still the whirring grew with the wind within the pages of the book, till, without a word, a flock of the funniest little men that Tom could possibly have imagined came flying up in circles and in the figure eight, about the room. They had little butterfly wings and bright green hats and coats with long tails that fluttered out behind.

Some had orange breeches and coats, others blue or red, in fact every color of the rainbow, and with it all was a dazzling brilliance everywhere. Many of the little men had short black wooden clubs and others were smoking little clay pipes. There were long noses and broad squat noses, many had bushy little whiskers that stuck out straight under their chins.

They settled themselves as comfortably as they could wherever they lit, over the top of the mirror, or like men at a base ball game in rows on top of the picture frames and the bureau.

Soon the foot of the bed was covered, then the floor was swarming and in all there were upward of nine hundred of these funny little creatures.

The very first little man to fly in, from the manner of command that he assumed, together with the length and breadth of his whiskers, and too, the size of his club, seemed to be their leader.

He took the seat on the top of the bed post, and sat with his legs crossed, calmly smoking a short black pipe, sending tiny clouds of smoke all around him while he waited for all his followers to settle down. Then, standing up, he pushed his hat on one side and deliberately knocked the ashes out of his pipe, and with his feet crossed, stood leaning on his club and looking at Tom.

"Good morning—or good evening, I mean," said Tom in a scared and husky voice.

Then all the little men burst into a roar of laughter and rocked and swayed, and held their sides like they feared they would burst.

But their leader seemed to resent what the scared boy had said and bristling up, shook his stick at Tom's head and started bellowing away at the top of his thin squeaky voice. "Mornin'! Mornin'! Now what do ye know about mornin'? Ye great big lunk-head you. Ye are trying

to tell me something about the mornin'. Me that's been chased by the mornin' since the world began, hey? And with the days getting longer and the nights getting shorter."

Then he flew down from his perch and before Tom could wink the little ruffian had banged him a good smart wallop on the head.

"There's a puck of the knob to learn ye manners," he said, and flew back to his perch on the bedpost.

Now Tom was nearly dumbfounded with such manners, especially with the little man's objections to his manners, and he really meant to be polite in what he had said.

So he tried to explain. But try as he would, every single thing he said the little leader would twist into an affront and fly down and bang him again, taking the utmost care to strike always exactly in the same spot.

Now we know that scouts are polite, and should be patient but there are times when even a scout turns, and with every puck of the knob Tom Gordon bristled up himself. Though he was quiet he never lacked spirit. And when he thought this wild little man with his band of ruffians had ridiculed him and banged his head just a little too much, he gave one jump for the bed-post and tried to knock the little wild man off.

It would have been better if he had lain still, for in an instant the room was in utter darkness with all the little men buzzing around him belaboring him with their clubs while others jabbed him with sharp thorns they had concealed in their belts.

From the way they went about it together with the amount of merriment each successful attack afforded them, and there were many, Tom soon concluded they knew the game too well for him to make much headway against them, then he thought of the push button under the pillow and he made one dive for it and lit up the room again. With the pillow in his hands he began making frantic sweeps through the air in the hope of knocking over some of this swarm of little men, and perhaps clearing the room of them.

For hours and hours this turmoil kept up, with the little men having all the fun, Tom fanning the air and the fairy folk skimming out of the way with just enough time to exasperate Tom, and set the fairies almost into paroxysms of laughter at his failures.

Then about forty little fairy men gathered together and ripped the sheet from the bed and with a sudden twist they had it wound round Tom's neck and arms and down he went on the bed, all tied up and almost exhausted.

Little by little they quieted down, and the little king stood up to make a speech. He took off his hat, floundered around in the tails of his green coat till he found a tiny crown that he placed on the top of his tousled head. Then coming up close to Tom he jumped up on his chest and stood threateningly as he spoke to him.

"By this and by that, o' what I've seen of ye to-night I've one three halfs of a mind to put ye down as rough."

"Get out of here, or I'll yell and wake up everyone in the house," retorted Tom, almost beside himself.

"Yell wanst and I'll jam the pillow down your throat and then push it farther with me stick," snapped back the king as he swung his club close to Tom's nose.

"I know all about ye, wid yer secret of making yersilf taller, thinking it a disgrace to be small. Now look at me, do ye see anything to be ashamed of in me? Don't you answer me back but listen to me talking. I'm just peffik. I came here to-night wid the intention o' helping ye a little, but wid yer impidence and low behavior this

very evening I have four or five halfs of a mind to make ye shorter than ye be now. Then how would ye feel gadding about wid your friends over the hills?"

"Who told you that?" asked Tom, slightly mollified and very much perplexed.

"Go way wid ye," bellowed the king, "don't talk back to me I tell you," and he made another pass with his club, this time so near to the boy's nose that he could feel the wind of it, and with such exertion that he lost his balance slightly and his crown fell off. At this all the other fairies burst into a thunder of laughing at their chief, and he, turning on them, began chasing them all over the room, they upsetting the furniture in their haste to get out of his reach.

"Have ye no respect for your elders, I am asking ye?" yelled the king, buzzing back close to Tom.

"I'm squiffty towsind years older than you be, you two years old little pickle seed, impudenting me like that wid foolish questions."

"I'll be fifteen years old on my next birthday, and not two years old," replied the boy, "and I'm not any pickle seed either."

"Thunder and turf," howled the infuriated little leader of the fairy host. "Hey! Hey! and some more of your jibber jabber is it? Grow him, grow him! One leg at a time."

In an instant, without much trouble, the boy's left leg began to stretch and grow.

"Ye can have it a yard for every year you've lived, and if ye can't exist without some more of your yam jabbering at me, I'll make it twinty miles for each and every year."

All this was getting too much for poor Tom, and it almost made him sick when he saw his foot, very much enlarged, grow across the room, through the open door and out into the hall.

But he thought quietly to himself that when he was big all over he would be better able to squeeze the fairies into a corner, and perhaps gather them all in one hand, and he began to laugh to himself.

When the old fairy saw him smiling, he thought he must have made a big blunder somewhere and immediately ordered his men to let go, and back snapped the leg again to its proper length.

It was usually with teasing that these little fellows got most of their fun, and not often, unless trapped, would they resort to more severe measures.

Tom felt a little better now that he was back to his normal size and called to a little white and orange fairy to drop his tooth brush when he saw him polishing his shoes with it.

But the more he remonstrated with them the worse they all behaved, throwing hair brushes, shoes, neckties and everything they could find, upside down and inside out.

Then with a great shout they all began to dance and sing. The old king standing on Tom's chest was the heartiest of them all with a rhythmical swaying, now backward, then forward, their feet moving too fast for the eye to follow.

Every few seconds the king would give a yelp that changed the steps of the dance, then he would jump way up in the air and come down on the boy's chest exactly in time with the music.

Though he was tied up and could not reach to brush the king off his chest, Tom could talk; still he had found that was anything but a help in his present plight, especially when he found that every word he uttered brought nothing but an added flogging.

Then quick as a flash Tom thought of a plan, and leaning forward he just whispered so that only the little king could hear him.

"Old odd shoe, I think I have YOU now, I've read all about you and I think I know your tricks and what to do with you. You have had your fun and now I think I am going to have mine. I'll keep my eye on just you no matter what you do to me and I've got you."

The rollicking reckless jovial old buck of a king stopped dancing at once and for several seconds stood staring at Tom, all the bravado oozing out of his brogues, as he stood there speechless.

a word would he say, for as everyone knows the fairy man is in your power as long as you keep your eye on him.

All silently and quickly the other fairies flew back into the book again and Tom knew they must be the DUINE SIGHE of which he had heard and read, and the little fellow that he had now under the spell of his eye was no other than the famous LEATH BHROG LEPRECHAUN who each night leads the fairy host from the legends of the good people in Ireland



Tom called to a little white and orange fairy to drop his tooth brush when he saw him polishing his shoes with it

His little eyes blazed, then softened and his face became pinched and distressed as he turned to the boy.

"Now what would ye do to a poor old fairy man who thinks the world of ye? Mightn't ye at least tell me the time o' day it might be getting to be, for a poor old uneddicated fairy man?"

But the Gordon Kid had sense enough to keep his eye right on the king and never

around the world for exercise and recreation. They will pester anyone they meet, yet with the same high spirit would do him a great favor.

Leath Bhrog at last sat down on his little green hat and dusting off his crown slipped it back in his pocket.

Then, unconcerned like, he turned to the boy again, "Hey, hey. So it's that way the wind blows is it? Be done with this

business now or you'll find there is both wood and stick in me fist that I'll be offering to you pretty soon."

Not a word did the boy say in reply, but as the old villain of a king crept up close to his nose and swung back his club with his face turned away Tom slipped his arm loose and caught the old leprechaun by the leg. He let a screech that might have been heard in three townlands if anyone had been awake, but luckily they were not.

"Thunder and turf, don't put me down. Thunder and turf, don't put me down," he howled. "Paustha, paustha! let me go. Ye win, I'll grant ye, but let me go."

But the boy still held on, knowing that if he so much as winked his captive would vanish.

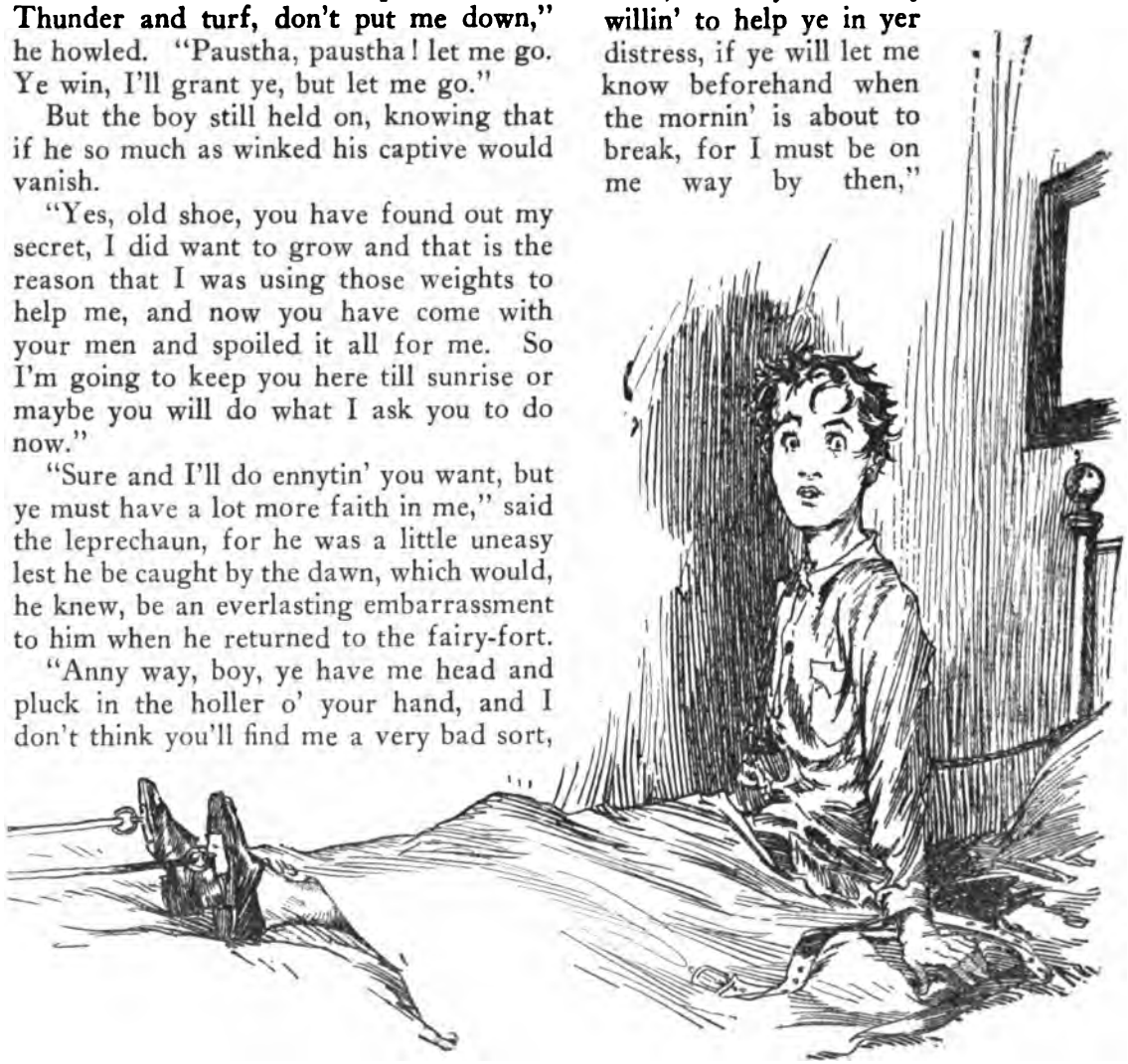
"Yes, old shoe, you have found out my secret, I did want to grow and that is the reason that I was using those weights to help me, and now you have come with your men and spoiled it all for me. So I'm going to keep you here till sunrise or maybe you will do what I ask you to do now."

"Sure and I'll do ennytin' you want, but ye must have a lot more faith in me," said the leprechaun, for he was a little uneasy lest he be caught by the dawn, which would, he knew, be an everlasting embarrassment to him when he returned to the fairy-fort.

"Anny way, boy, ye have me head and pluck in the holler o' your hand, and I don't think you'll find me a very bad sort, aside from me boisterings and me strong humorousness. Have ye got the pluck inside of ye to take the chanst to try me out to suit yourself?"

"Yes, I think I will," said Tom soberly, and shut his eyes. When he opened them again, there stood the old fairy grinning up in his face.

"Now I think we understand each other better," said the king, as he polished his green silk hat on the sleeve of his coat. "And do you mind if I call you Tommy? Now, I really do like ye, and would be willin' to help ye in yer distress, if ye will let me know beforehand when the mornin' is about to break, for I must be on me way by then,"



The Gordon kid awoke and it was morning

mused on the king, now thoughly at his ease with Tom.

"Now don't let the length of your legs bother ye any more, for ye have me promise to attend to that business for ye. Ye're only just wantin' to be he-sized I'm thinkin' ain't it?

"Whist Tommy, and have ye some more additional pluck to leave your troubles wid me intirely?" he whispered musingly, while he dusted his wings very carefully, then lit his pipe and with a nod of his fuzzy head dashed headlong into the book, glad to be free again.

* * *

The Gordon Kid awoke and it was morning. He examined his left foot very carefully, it looked all right to him as he took off the shoes and the shoulder braces and stood up. "Whew, I feel stiff and sore, and from the treatment of last night I guess, and I don't think I had better wear this any more."

He rubbed his back and it too felt sore in spots. "That was some night, believe me," he said to himself and went down to breakfast.

From that day Tom began to grow.

Wireless for Amateurs

By "Spark Gap"

THE training of wireless operators has been standardized, as in the teaching of any other science. In the best training schools for operators there is a regular technique of instruction. The pupil is instructed in both sending and receiving in four distinct stages. The first stage in sending consists in teaching the prospective operator to construct the letters and figures correctly. The first stage in the instruction of the receiver consists in learning to pick up and write out every letter, numeral and punctuation mark correctly, the trick being to pick up the sounds. In the second stage, both in sending and receiving, the student is taught to make a succession of letters in order to write a code word or a cipher combination, and to gain from experience what is known as "rhythmic steadiness." The main object both in sending and receiving is to develop the power of writing accurately and the comprehension of a succession of letters.

In the third stage of instruction, both in sending and receiving, the student is taught to develop telegraphic endurance. The secret of success in both cases is unlimited practice.

The last, or fourth stage, consists in developing style and speed, and, in short, learning all the tricks of the speedy operator. Most teachers insist on teaching these four stages separately. The temptation of the beginner is to skip from one to another without completely finishing one stage of instruction. Each stage must be thoroughly mastered. In some cases a student may seem to develop more rapidly by taking a short cut, but his work is likely to be "out of balance," and he is handicapped in the attempt to develop an efficient style of sending and receiving. The operator who is properly trained will be able to fulfill the requirements of each of these stages with the least possible amount of conscious effort, and this is after all the best test of a first-class radio man.

The self-taught wireless operator often makes the mistake of trying to develop speed long before he has developed the necessary steadiness. As a result he will probably fail to become either a steady or a speedy operator as regards either sending or receiving.

It is very important for the amateur wireless operator to begin his practice in sending in the most approved manner. It may seem easier for some to hold the key in a wrong position, just as a beginner in baseball or golf may get better results at first by holding a baseball bat or a golf club with his hands in the wrong position. Every boy who operates a wireless station should learn first of all the proper method of gripping the key. The best position is very much the same one instinctively takes in holding a large pen or pencil. Your thumb should press against the side of the knob to steady it. The index finger should be pressed against the key either in a convex position or straight, but never in a concave position. The second finger should rest easily over the key knob. Keep your wrist relaxed, as well as all the mus-

cles of the hand. It is impossible to gain speed and accuracy in sending if the muscles of the wrist and fingers are tense and rigid.

It should be remembered that not only speed but clearness in forming the dots and dashes depends largely upon the action of the hand and wrist. Now when sending a message be careful to keep the dots short and sharp, but at the same time firm. A dot is one-third the length of a dash. Remember that the dash is three times as LONG—not as HARD—as the dot. The pressure on the key should be the same in sending either dots or dashes. Make the space between the letters the same length as a dot. It is important in sending that the group of dots and dashes forming a word be kept close together, enabling the receiver to recognize when each separate word begins and ends. A speed of ten or twelve words a minute will be found fast enough for all ordinary sending. In practicing strive to gain absolute accuracy rather than speed in sending.

It is generally considered better to learn the code by the sound of the dots and dashes and not by visualizing them. In the early stages try to pronounce the syllable "tuh" for the first dot and "duh" for the other dots. For the dashes use the syllable "dah." The letter L, for instance, would thus be read "tuh, dah, duh, duh." With a little practice one gains the sense of the rhythm of these sounds, and the code is impressed on one's memory much faster than by merely remembering the appearance of the dots and dashes. In receiving bear the same rule in mind. Expert operators will tell you that the best way to receive quickly and accurately is to receive by sound. In training military operators it has been found that a fair proficiency can be gained in the code on the average by about forty hours' practice.

Listening In

By A. L. Bolton

When Bob and I were listening-in
We heard the Farallon begin;
We tuned up to him and caught his call
Out in the Sea where the breakers fall;
And he said "Mare Island, do you get me,
This is Farallon Island, out in the Sea?"

Mare Island answered, "I have you, Steve,
You send as though you needed six months leave,
Have boiled Murres eggs and Penguin stew
Proven a diet too rich for you,
Or the bicker and cry of ten thousand birds
Got on your nerves and rattled your words?"
Then Goat Island came in, "I got your spark,
And thought I heard the Sea Lions bark,
And the foghorn's strident monotone,
That marks the misty Farallon,—
They have you stranded, and there you'll stay,
Or swim ashore without your pay."

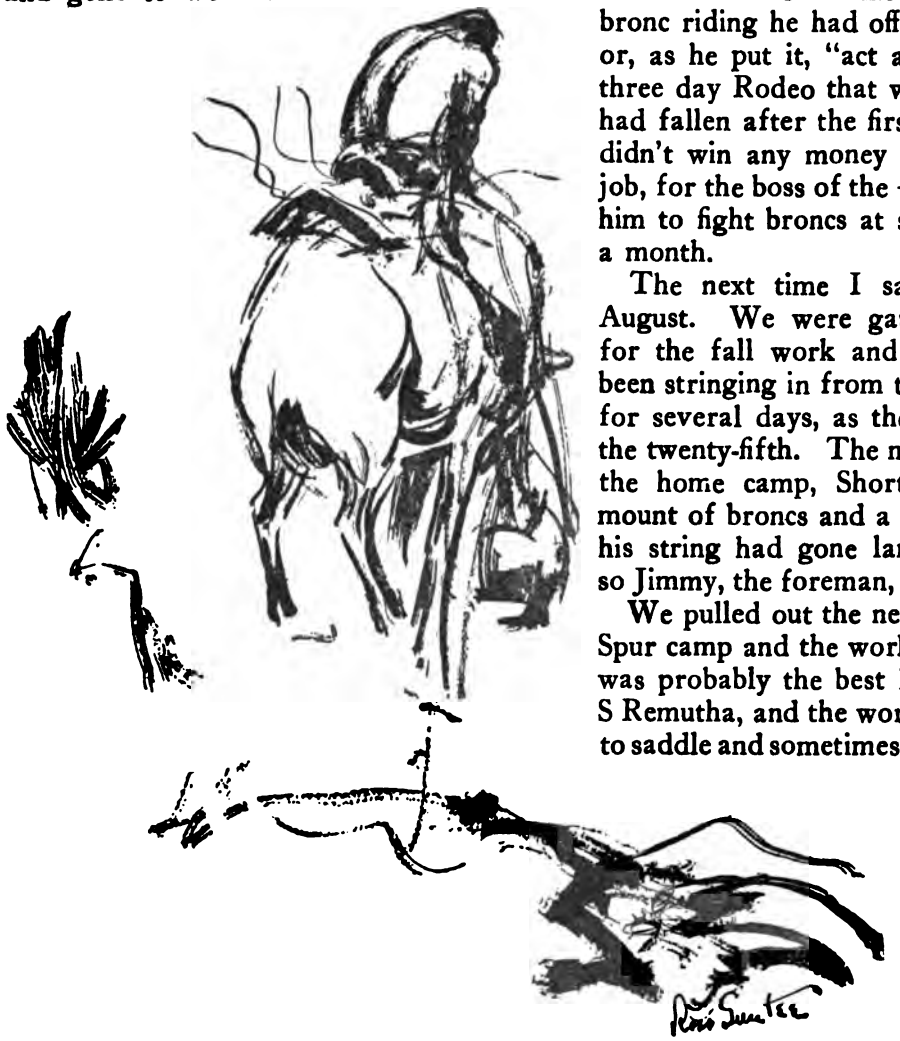
Then Farallon signaled S O S,
And what he said I cannot guess,
For the sparks just flew from this aërial,
And were sizzling hot as the message fell.

Shorty

By Ross Santee

With Skeches by The Author

SHORTY'S story was simple. I heard it on the way to the ranch. Aside from his saddle, bed and two sacks of barley we had the back seat to ourselves. He was raised "down yonder," meaning Texas, had left home at fifteen and gone to work for a horse outfit in New Mexico. He had worked there three years and having cornered all the money in New Mexico, decided to have a look at Arizona. He landed in Globe with six hundred dollars, lost the six hundred trying to make a flush beat a full house. And for five dollars and his entrance fee in the bronc riding he had offered to play clown or, as he put it, "act a fool," during the three day Rodeo that was on. His horse had fallen after the first two jumps so he didn't win any money but he had won a job, for the boss of the +S outfit had hired him to fight broncs at seventy-five dollars a month.



The next time I saw Shorty was in August. We were gathering the horses for the fall work and the punchers had been stringing in from their various camps for several days, as the round up started the twenty-fifth. The night before we left the home camp, Shorty rode in with a mount of broncs and a bed mule. One of his string had gone lame on the trip up so Jimmy, the foreman, cut Pebbles to him.

We pulled out the next morning for the Spur camp and the work started. Pebbles was probably the best horse in the Cross S Remutha, and the worst. He was gentle to saddle and sometimes went for days without pitching but always he watched his chance and the first slip the rider made Pebbles would get his man.

The wranglers were in early with the saddle horses for the feed was fresh and the horses had not drifted far so the outfit left before sun-up. The cook was busy with his pots and pans while the punchers were saddling up but when he saw Pebbles led out he wiped his hands on the flour sacks that served as apron and stood leaning on the gouch hook until Shorty mounted. Nothing happened so the cook went back to his pots and the horse wrangler started stringing his bunch up the narrow trail that led to the mesa.

The drive had started to come in, the two punchers who were holding up had a little bunch thrown together, when down the canyon came Pebbles without saddle or bridle.

Bob roped Pebbles, then started to hunt for Shorty. At the bottom of the canyon he found him, still sitting in the saddle with both feet in the stirrups but upside down and unconscious, his face and hands covered with blood. Pretty soon he came to and said he could ride to camp, so they helped him onto a gentle horse, for he could not use his hands. In a little while his head cleared so that he was able to ride alone. He was turning a steer, he said, and as he dodged an oak limb the saddle turned and Pebbles went pitching down off the side of the mountain. He was nearly to the bottom when he pitched the saddle off. That was the last Shorty could remember. But he was a good horse, Shorty said, or he never could have kept his feet among the loose rocks and boulders.

By the time we got to camp both of Shorty's eyes were completely closed. The horse wrangler held him while the cook painted his face and hands with iodine. At the same time the cook gave up a lot of head concerning outlaw horses, and anybody who hadn't any more sense than to ride 'em in such a rough country.

The outfit didn't change at noon but came in about four o'clock, turned loose and ate dinner. Cow punchers are a cheerful lot. Bill Teal reckoned that Shorty might live but didn't think he'd ever look the same, and, while the cook was feeding Shorty soup, by way of cheer the outfit sang him *The Horse Wranglers' Song,* the burden of which was that if he didn't die they'd get him another horse in the morning.

The third morning the outfit was moving to Alkali. Guy and the cook had gone with the kitchen mules and Bill and Bob were pulling out with the bed horses. Shorty didn't look like much, but he could see a little now and use one of his hands. The others of the outfit were catching horses when Dave Reed spied him sitting on a rock holding his bridle.

"I got a gentle horse he can ride," said Dave.

A half dozen punchers now offered gentle horses calling them by name, so Jimmy, who was roping, asked Shorty which he wanted.

"I'm much obliged," said Shorty, "but if one of you all will saddle him, I'll ride Pebbles to-day."



Constructing Wireless Apparatus

By Edward T. Jones
of the Radio Intelligence Bureau

Constructing Wireless Detectors

MANY a beginner in this bewitching game has felt that he cannot afford the steep prices attached to some instrument which he has seen in some advertisement and is discouraged over the fact that financial conditions make it necessary to close up the wireless receiving set in disgust. There need not be any such action on the part of a beginner if he will but follow me carefully as I describe how to make several forms of excellent detectors.

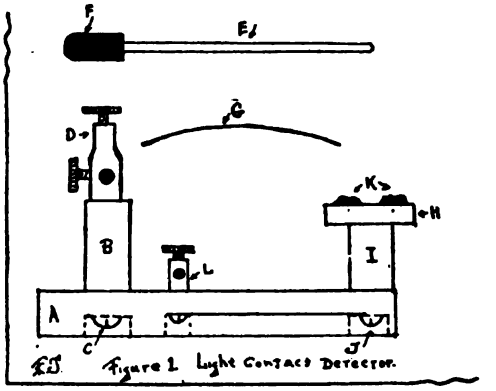


Figure 1 Light Contact Detector.

Some crystals such as galena, cerusite, and some silicon require a very light adjustment or contact spring, while others such as silicon, carborundum and iron pyrites require either a stiff spring or a contact point with quite a bit of pressure. These two detectors are shown in Figs. 1 and 2. They have been studied from all angles and have been found to work with the best of adjustment and precision.

A good type of galena detector with light contact point and very good arrangements for adjusting its members is shown in Fig. 1. In order to make the drawings and parts well understood each is assigned a letter which is referred to hereinafter in connection with their description. This detector can be constructed in about one hour and will cost the builder a little less than fifty cents. If he were to purchase this same detector on the market I doubt if he could obtain it for less than two dollars.

To begin the construction of this detector first procure a wooden base measuring ½ inch thick by 2 inches wide by four inches in length. This is denoted by the letter A in the drawings. A small piece of wood B, either round or square about ½ inch wide (or in diameter) and 1 inch high with a hole bored through the center to permit the 8-32 brass screw C to pass through. A double binding post D which can be procured from any electrical store is mounted on top of piece B and held to it and the base by screw C. A ½ inch hole is bored in the bottom of the base to permit the brass head screw to fit either flush or a good margin from the bottom of the base as is shown. A small piece of No. 14 bare copper wire "E" measuring 3 inches in length is cut from a coil of wire or spare wire about the workshop. A small wood handle like F measuring ½ inch in length by ¼ inch in diameter with one end rounded off is made fast on one

end of the wire rod. This can be accomplished by drilling a hole into piece F slightly smaller than the No. 14 copper wire and forcing the latter into this hole. After this has been done it is necessary to first pass the wire rod through the lower portion of the two-story binding post before soldering the piece of "E" or first mandolin string E to it. The mandolin string "E" should be three inches in length and slightly bent as shown so that the point will rest on the galena, cerusite, or other light contact mineral—K. Connection is made to the contact point by passing a wire in the top portion of the two-story binding post and brought to the receiving apparatus. The remaining connection is had through post L which is connected through the base by copper wire to the cup post J. A small piece of wood similar to piece B is cut for I with the exception that it is shorter in length. Piece I is but ¾ inch high. The cup H is made fast to piece I and base A by screw and nut J. As is noted this is also made to fit flush with the bottom of the base. The mineral K is placed in the cup with woods-metal or some other low temperature melting material. This can be procured from any reliable radio dealer. Tinfoil will serve the purpose if it is packed down around the mineral very tightly.

The last method is not recommended simply because in time it will work loose and cause considerable losses in the strength of signals received due to direct losses through high resistance contact. When it is considered that there is very little current being handled in the first place we immediately realize that there is none to be wasted. Conservation of energy in this case is paramount.

Always keep the detector free from dust, that is, the minerals. A good way to adjust this type of detector is to pass a pencil under the mandolin string and raise it slightly above the surface of the mineral then letting it come to rest gently upon the mineral. If this is done several times a spot will be discovered where the signals come in the loudest and it is then only necessary to put the point on that spot. Care should be exercised in adjusting the pressure of the wire on the mineral and it should be brought to bear on the mineral very lightly. Such a detector with light contact springs and arms loses its adjustment very rapidly unless some precaution is likewise taken against this eventuality. To guard against this it is wise to place strips of cotton wadding under the base of the detector and the table. This will take up practically all the vibration present. To protect the mineral from dust it is wise to place a large glass jar over the detector after it has been adjusted, care being taken not to knock the detector or the table with the jar and cause the detector to lose its adjustment.

Now we are going to tackle a detector to be employed with heavy contact minerals such as (some) silicon, carborundum and iron pyrites, etc. Like the detector first described this one will result in quite a saving for the beginner and he will have in his possession two detectors for one-half the price he would have to pay for one of them if purchased in the open market.

The base of this detector K measures ½ inch thick by 2 inches wide by four inches in length. A piece of wood X measuring ½ inch square by 2 inches in height is made fast to base K by wood screw Y. A small piece of brass M ⅛ inch thick by ½ inch wide by 1½ inches in length is made fast to the top of wood piece X by another wood screw. Piece M is threaded about ¼ inch from the end to permit 8-32 screw O to pass through and bear on piece Q which is made of 1-16 inch spring brass ½ inch wide by 2½ inches in length. P is a hardrubber piece

measuring 1 inch in diameter and can be procured from a radio supply store for about ten cents. At the end of piece Q a binding post S taken from the zinc of an old dry cell is soldered and this serves to hold the contact point T, which also permits the contact points to be changed at will. One may desire to use steel, another gold and still another aluminum. Piece Q is made fast to post X by binding post R as shown. The cup of the detector U is made fast to the base by the 8-32 screw and nut V. The cup can be taken from the top of an old dry cell—by removing the carbon from it. This applies to the first detector also; however, there are all kinds of small brass cups to be had for the asking at electrical shops. Binding post Z is connected by bare copper wire through the base to post V of the cup. Connection to the receiving circuit is had through posts R and Z.

These two detectors will more than serve the purpose of showing how easy it is to construct wireless instruments with practically no tools and how much money can be saved by actually constructing your own instruments.

Constructing a Loose-Coupler

When a beginner is planning his receiving station his attention is immediately directed to the tuning instrument or instruments. He will naturally look up the plans of a good loose-coupler tuning device. This instrument when employed in connection with silicon detectors and the like types of detecting devices functions to a greater degree of selectivity, precision, etc. For this very reason, the author has set out to lay before the beginner a loose-coupler assembled so that the constructor may get a general idea of just how the finished article should appear.

To furnish sizes for the amateur or beginner in connection with such an instrument is of no avail since they are wont to make use of what material they have at hand to accomplish the same thing. The drawings of the completed loose-coupler shown in Figs. 1 and 2 are reduced one-third and in that way give to the beginner an idea of how to proceed with the construction.

The first thing to do is to obtain two cardboard tubes, one for the primary winding measuring 5 inches in diameter by 6 inches in length; and one for the secondary winding measuring 4½ inches in diameter by 6 inches in length. The primary is wound with one layer of No. 22 enamel copper wire within one-half inch at both ends, while the secondary is wound with one layer of No. 28 enamel wire also with one-half inch spaces at both ends. The primary has no taps because a slider is employed. The secondary is tapped in the following manner. First one-half inch of winding tapped off. Next three taps one inch of winding and the last tap (which is the fifth) one and one-half inch of winding. This small number of taps is recommended simply because a variable condenser of .001 mfd. capacity is to be shunted across the secondary windings. Selective tuning can be had with this arrangement, while the mechanical parts are aided materially by not having too many contact points on the front of the secondary wood head.

The best method to wind the cardboard tubes is to follow these instructions. By taking your spool of wire which is to be wound on the tubes and making its free end fast to a nail, proceed away from that point letting out the wire as you go. When about one hundred feet from the point where the wire was made fast fasten the wire (without breaking it from the remainder of the wire on the spool) to another nail or wooden object. By going

back to the end where the free end of the wire was made fast and tying the wire to the cardboard tube, same can be found very closely by walking up towards the other end as the wire is wound on the tube. I have used this method throughout my years of winding coils and find that it is very efficient. You take advantage of the light which the outside affords and can push the winding in closely with the thumbnail as the work progresses. The inside job never appears as well wound as the outside job because you can see the spaces—if any—and it does not hurt the eyes like artificial light does. I mention this method of winding because I know that one out of every 25 experimenters has no other means of winding coils. Frankly I believe that the proportion is greater than I have quoted.

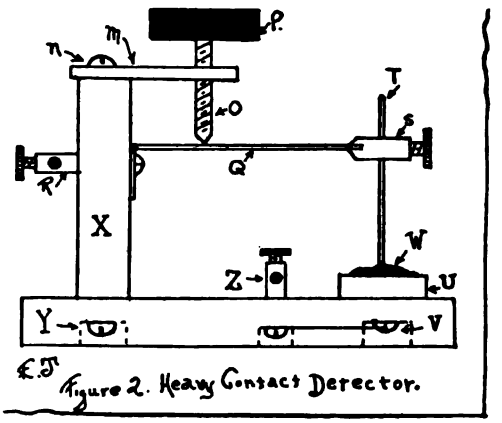
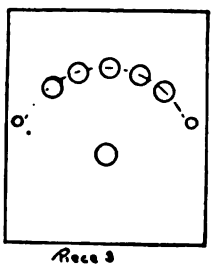
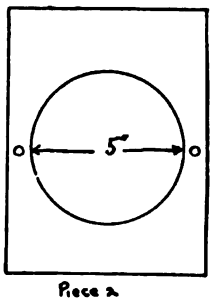


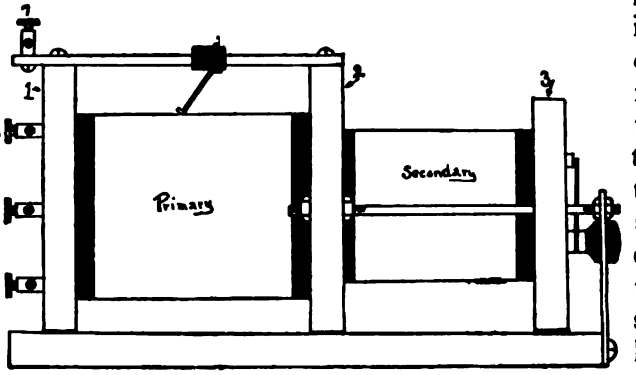
Figure 2. Heavy Contact Detector.

When tapping the secondary winding at the intervals quoted above begin in the following way. Measure off the cardboard tube before beginning the winding and punch holes through the tube at the following points beginning from one of the ends. One-half inch—to tie wire so that winding can commence. One inch—first half-inch tap—two inches, three inches, four inches, five and one-half inches, and one-half inch space is the remaining end of the tube bare of winding. The winding is begun by tying the wire in the first hole punched in the tube for that purpose. When the first half-inch tap is reached, the wire is not broken, but is simply drawn into a loop about eight inches in length and twisted at its lower end nearest the cardboard tube. The free end of the loop is now passed through the hole in the cardboard tube and held taut inside the tube as the winding progresses past that point, then it can be released because the winding has progressed sufficiently ahead of the tapped portion that it will now hold its position without any aid. The remainder of the taps are made in this fashion. These taps are to be soldered to the contact points on the front of the secondary wood head. This will be described later on.


Piece 3



Piece 2



After the primary and secondary coils have been wound and the latter properly tapped it is necessary to next provide the wooden parts which are to hold the coils in their relative positions. The base of this instrument measures 1 inch thick by 18 inches in length by 7 inches wide. It can be made from cypress, white pine or preferably some hard wood such as oak or mahogany. All holes bored in the bottom of the base are countersunk and filled with putty. The end piece of No. 1 in the drawing measures 6½ inches square by ½ inch thick. Piece No. 2 measures the same as piece No. 1. One must take every precaution when constructing this piece for it is rather a hard matter to cut the large hole to take the primary tube without breaking the piece before completing same. By referring to Fig. 2 the exact dimensions of piece 2 are shown. A hole 5 inches in diameter is cut to take the primary tube and two holes are drilled to take the rods on which the secondary and its wood head move back and forth to provide the necessary adjustments. The two holes are bored to fit a 10/24 copper rod which is threaded at both ends.

Another wood head is required and that is piece 3—of the secondary. This is also shown in Fig. 2. This piece varies slightly in the dimensions of pieces 1 and 2. It is 6½ inches wide by 5½ inches in height. The tubes are made fast to ends 1 and 3 by means of small round wood pieces which fit snugly into the cardboard tubes and which are made fast to the wood ends after which the tubes are made fast to them with small brass or copper brads.

The secondary control switch is assembled on the secondary wood-end as shown in the drawings. One hole to take the switch handle and movable members (whatever the design of switch) and five holes are drilled as per sketch to take the contact points. The two leads from the secondary windings (one from the winding and one from the movable switch member) are brought through the primary tube to binding posts 4 and 5, while the primary winding beginning at post 2 is brought to post 6 and the remaining primary connection is had from post 7 on the primary slider itself. The slider shown on the primary coil is a very simple one. An ordinary piece of 1/16 inch brass sheet one inch wide is rolled around a piece of ¼ inch brass rod and made to fit its form. Another piece is soldered extending from it to the primary winding on the tube. When this slider is brought to bear on the winding and is rubbed back and forth several times the enamel is removed from the windings and the slider member takes actual electrical contact with the wire. In using enamel wire a great saving of time, etc., is accomplished for when cotton or silk covered wire is employed the covering has to be burned off with a hot soldering iron or sandpapered off. This is quite an easy method as compared to the two mentioned when employing other than enamel wire.

To hold the 10/24 brass rod, two pieces of ⅛ inch copper strip are cut as shown and the rods are made fast to them at the end of the base. In this manner the secondary wood head is able to move toward or away from the primary coil. With such a loose-coupler as this one will have an instrument worthy of display. By neatly staining the wood parts and shellacking the windings the instruments will take on the appearance of a maufactured article.

The Audion Control Panel

All the boys to-day are making use of the highly sensitive audion. With an audion it is estimated that one can copy

from distances which are barely possible with the best type of mineral or electrolytic detectors. In the detector or first audion tube employed, there is a slight amplification of the signal received, however, when a second and even third tube is brought into play as amplifier units respectively, then things take on a changed appearance "right now." Signals which were very weak when using the audion tube alone are now made so strong as to be easily copied some fifty feet from the receivers. I am going to describe these pieces of apparatus and how to make them at from one-half to three-quarters their market price.

In order to handle an audion correctly, one should have in his possession a vacuum tube or audion control panel. This is employed in addition to the tuning apparatus and is considered the "detector unit" separate and distinct. There are all types of audion control panels on the market to-day selling from $9 to $25 and as it is not my idea to discuss which one is of the best type I am going to start right in and describe to you one which I feel is best suited for all-around work and one which is simplicity in itself as well as an efficient but cheap one.

My main aim is to keep the price within reasonable limits for I know more about the boys' pocketbooks than many would think. The parts required for the construction of this control panel are as follows:

1 audion socket	$1.50
1 "A" battery rheostat, 10 ohm preferred.	1.00
Eight binding posts	.80
1 piece bakelite 4 in. × 6 in.	.50
Small pieces of No. 18 bell wire	——
	$3.80

These can be procured from any one of the many radio supply houses or probably the electric company in your city handles radio supplies as a side line. If you cannot obtain them in your city write to the author and he will furnish you with a reliable concern's address.

The first thing to do is to bore the holes. Eight holes are required for the binding posts. These are drilled directly opposite each other on the panel in pairs so as to look neat when completed. In the upper center near the top a large hole is cut so that the audion socket passes through the bakelite piece. The best way to drill this hole is to cut several small holes near together around the circle previously drawn to the size of the socket piece and then use a round file to finish the job. The socket is made fast to the bakelite piece with small screws and nuts. The audion sockets are so varied in their types that nothing much can be said off-hand about the best way to secure them. The constructor will have to use his best judgment in doing this with the particular type of socket he obtains from the radio supply house.

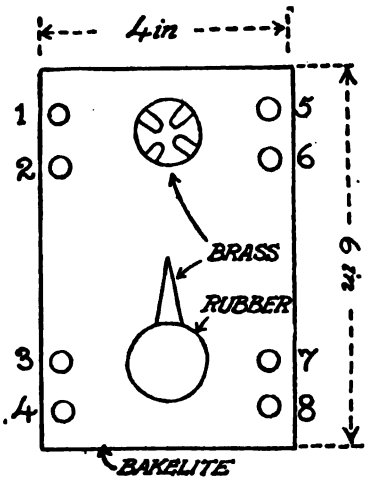
Directly below this at the bottom center, a hole is drilled to permit the shaft of the rheostat to pass through so that the handle for adjusting same will be on the outside of the panel while the resistance wire unit remains secured behind the panel. These instruments vary, too, in their design; however, they are all built for the same use and outside of mounting them differently they are all about as good as you can obtain for this purpose.

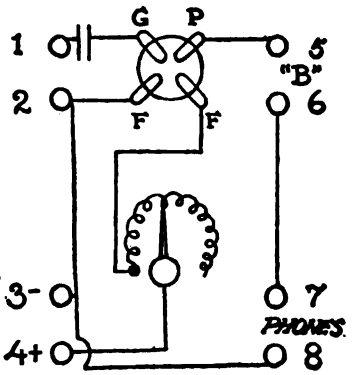
In drawing No. 1 the binding posts are numbered so that when you are asked to refer to Fig. 2 you will be able to trace the conections. Binding posts 1 and 2 are termed the "Input" circuit. These two posts connect to the receiving or tuning apparatus. Binding posts 3 and 4 are brought to the "A" battery which is for the lighting of the filament of the audion detector tube. This is a 6-volt battery. Posts 5 and 6 are brought

to what are known as the "B" batteries. They are connected to the plate of the audion through post 5 to the socket contact piece marked P. These batteries must range from 20 to 60 volts; however, two "bricks" of them measuring 22.5 volts each will do. These can be purchased from any radio supply house. Binding posts 7 and 8 are connected to the telephone receivers which the operator wears on his head. This completes the connection of the audion control panel.

I will leave this to the constructor. The panel can be supported by small angle irons made from ⅛ inch brass pieces, or a box can be built to fit around the bakelite piece so that its face fits flush with the edges of the box.

This can be done by placing small wood lugs inside the wood box at the corners and after drilling holes through the bakelite panel at each end screw same to the small wood pieces provided for that purpose.







NIGHT

Great oaks that have weathered ten thousand blasts,
Gray beeches, as tall and as straight as masts,
And poplars whose heart-leaves the zephyrs shake—
These stand by the marge of the lisping lake;
And there in the magic summer night
Our camp fire burns with a cheery light.

Songs ring clearly 'mid laugh and jest
And tales of the sea, the chase, the quest
For glory—these while the circle harks
And watches the dizzying dance of sparks,
Bring old days back into our ken,
Show us the hearts of heroic men.

Taps—and the wind in the tree tops sighs;
An owl hoo-hoo's and his mate replies;
Scurries a light-footed rabbit past;
Downward flutter the first leaves cast;
While through the limitless darkened sky
On their march eternal the stars troop by.

The firelight flickers, and over all
Silence deepens, and slumber's thrall
Binds us; here on the ample breast
Of Earth, our mother, we take our rest
Till the east grows pale with the dawn's gray light;
Ho, for the woods and the summer night.

—Bert Leach.

H. C. Pitz



"Shoot lad, shoot," he heard someone crying beside him

The Ragged Rabble

By E. L. Bacon

Illustrated by J. M. Clement

THOUGH almost half a year had passed since the American colonies declared their independence, the portrait of King George III still hung above the big fireplace in Caleb Tucker's home. As Christmas Day, 1776, was beginning to fade into night, the king stared down benignantly upon Caleb and the old man's son, Tobias; and Caleb, puffing his pipe, stared back at His Majesty's fat face reverently, as a loyal subject should. But there was more than reverence in old Caleb's expression. While the king looked as if he had never had a care in the world, Caleb Tucker's wrinkled face, illumined by the glow of the open fire, was drawn with anxiety.

Presently Caleb rose from his big armchair, and crossed the room to the window, his wooden leg thumping sharply on the floor. Peering out, he saw the big trees along the banks of the Delaware bending low in a fierce north wind. The sky was black, and there was a flurry of snow. Above the howling of the gale he heard the roar of the river and the crashing and grinding of huge cakes of ice borne on the swift current. With a shrug of his shoulders, he turned back to the warmth of the fire.

"I have received bad news, Tobe," he said, as he fastened his gaze again upon the undisturbed face of the king. "George Washington's rebels have left their camp in Pennsylvania, and are marching on Trenton."

Tobe, busy whittling a stick, looked indifferent. His thoughts at that moment were less concerned with the progress of the war than with the big doll he had left at Ephraim Harway's house two days before to be presented on Christmas Day, with Tobe's best wishes, to Ephraim's six-year-old daughter, Samantha. Tobe—sixteen—almost a man—was like a big brother to pretty little flaxen-haired Samantha. He had a wonderful fondness for the child, and many a time went to no end of trouble to please her. Samantha meant much more to him than did either George Washington or George, the king. Reared in a Tory household, he had only a vague idea of what the Colonial army was fighting for. Indeed, many of the neighbors were equally apathetic, though Hessian outrages were at last beginning to rouse the Jerseys from their lethargy and turning them to the rebel cause. It was one thing to let King George's men fight their neighbors, but it was quite another thing to have hired German soldiers looting homes of patriots and loyalists alike.

Tobe's mind veered slowly from Samantha's doll to Caleb's words. "The Hessians will lick 'em, father," he said. "Those Hessians are the finest-looking soldiers I ever set eyes on. The rebels are a ragged rabble. Some of 'em haven't even got shoes."

"Shoes or no shoes, they can shoot," returned Caleb. "Bunker Hill told us that. And, if they should surprise Colonel Rahl's army in the night, as they aim to do, the result might be serious. Rahl must be warned. I am going to send a message to our friend, Lieutenant Wiederhold."

Tobe's sturdy figure stiffened suddenly, and a look of trouble came into his black eyes. "This night!" he exclaimed.

Caleb nodded.

"Who's going to take it?" asked Tobe.

"You are," his father answered sharply. "There's nobody else."

Tobe scowled, and glared ruefully at the blazing logs. The prospect would not have been so dismal if he could have counted on a horse to ride: but horses were scarce since the contending armies had swept through the Jerseys, and neither Caleb Tucker nor any of his neighbors had even one. And Trenton lay ten miles away.

"It's bitter cold, and there's a storm blowing up," Tobe protested.

"Tush!" cried Caleb, flushing angrily. "What is that to a strapping boy like you? If 'twere not for my lacking a leg I could walk three times as far in even worse weather. What is your comfort, when the fate of one of our armies may be at stake?"

As to that, Tobe had his own views. To him his own comfort meant considerably more and the fate of Colonel Rahl's Hessians considerably less than they meant to Caleb. But he knew from long experience that it was futile to argue with his father when once the old man had made up his mind; and already Caleb was whittling a goose quill with which to write the message to Lieutenant Wiederhold. Caleb's will was law in that house. He ruled with a heavy hand. There was no disobeying him.

Sullenly Tobe skulked into the adjoining room to get into his coat, boots and coonskin cap, and to slip some bread and salt meat into his pocket.

"A sad Christmas, this," he mused, as he recalled gay Yuletide festivities of former years which had taken place in that house. But he reflected that, although the day had passed without a celebration, they had at least had a good dinner in a comfortable home, which was more than could be said for most of their neighbors, whose homes had been looted by the insatiable Hessians. Caleb's well-known loyalty to the king combined with his friendship for Lieutenant Wiederhold had saved his household possessions from being taken by the marauders for the time being for which he was thankful.

When Tobe returned to his father the note to Wiederhold was already being sealed. "It is better than writing even to Colonel Rahl himself," the old man observed. "Lieutenant Wiederhold stands very close to his commander, and this message will surely be delivered instantly. Coming from some one unknown to him, the Colonel might ignore it, or it might not get beyond the guards of his headquarters."

Tobe stuffed the note into his coat, and went out into the gathering dusk. The hard snow crunched under his feet. The wind cut like a knife.

"Ten miles!" wailed Tobe, looking off over the dreary white fields and naked, swaying trees. "I'll be froze before I get there."

Veering away from the roaring, ice-filled river, he struck out southeastward in the direction of the Pennington Road. The dusk grew deeper and deeper. The wind rose higher, beating the intense cold through his thick coat. Before long a house loomed out of the dark. Not a window was lighted, and the bleak, stone walls had a sinister, forbidding aspect in the dreary, lonely night.

Tobe, as he stopped to look the place over, gave a low whistle of surprise. It was Ephraim Harway's house, and he could not understand why it was so dark and cheerless on this Christmas night, when he had expected to find a family celebration there.

He hurried to the door, and pounded the big, brass knocker. The summons brought only a dismal echo. He stood there for a moment, waiting impatiently for an answer, but the house seemed empty. The silence was oppressive. He was about to turn away, when a slight sound came from within, and presently the upper half of the two-piece door was cautiously opened a little way, and, almost hidden behind the lower section, little Samantha peered timidly up at him.

"Oh!" she cried. "So it's you. I was afraid those Hessians had come back."

Tobe reached over to the wooden bar that served as a lock, and let himself in. The place was bitter cold, and even darker than outdoors, except at the farther end of the room, where there was a feeble glimmer of light from some smoldering brushwood in the great stone fireplace. The sobbing of a woman startled him, and presently he discovered Mrs. Harway, her face buried in her hands, crouching before the miserable little fire. Beside her, stretched out on the bare floor, lay her husband. The room had been stripped absolutely bare. Not even a chair remained.

"Why, what's happened?" cried Tobe.

For a moment there was no answer, and the only sounds were the sobbing of Mrs. Harway and the wind at the bare windows.

"Hessians!" came a frightened whisper from Samantha.

The woman rose slowly to her feet. "I think those fiends have killed my husband," she said. "While they were robbing us of everything we owned he tried to interfere, and they struck him down with their gun butts. All this day he has been lying here without food and with not even a blanket to cover him. They left us not even a morsel to eat—left us to freeze and starve. The stove, and even the firewood, they took."

Anxiously Tobe stooped over Ephraim Harway. Across the man's forehead lay a great, red scar, and his face was deathly white. His eyes were closed, and he seemed only barely alive.

Ephraim Harway had always been a frail man, and Tobe wondered how he had found the courage to oppose single-handed the Hessian soldiers.

"He just lost his head," sobbed Mrs. Harway. "It drove him crazy when he saw those thieves taking all that we had toiled and saved for all our lives. He rushed at them like a wild man, and they clubbed him until he fell unconscious. Oh, the beasts! He is going to die, and I and little Samantha shall be paupers. They took the cows, the farm tools, the silverware, our money, everything!"

"And those Hessians took the big new doll you sent me!" sobbed Samantha.

"That's what they did!" cried the mother fiercely. "Think of that! They took even my little girl's doll, though it's many a mile they will have to go to sell it for a few copper pieces. I'm sorry now my husband ever took the oath of loyalty. We had a protection paper from an English officer, but those Germans couldn't read it—didn't want to read it. What right has King George to send those foreign hirelings among us? You may tell your father that it was his friend, Lieutenant Wiederhold who brought that pack of thieves and murderers here."

"Wiederhold!" cried Tobe.

"Yes, Wiederhold!" she cried. "He's as bad as the rest of 'em. There isn't a spark of pity in a Hessian breast."

Mrs. Harway, who had been a cripple for years, picked up a heavy cane from the floor, and with much effort limped to a window and looked out.

"All day I've been waiting for somebody to come," she said, "but not a soul has been this way but you. I knew I could never walk the two miles to the village

through the snow and bitter wind. Perhaps I should have run the risk of sending Samantha for the doctor, little though she is, but I was afraid she would lose her way and freeze. And the roads are not safe with the Hessians prowling about."

Tobe stood gaping at the fire. His fingers were itching to pull out his father's message and throw it into the flames. But he checked himself. Obedience was a strong trait in the Tucker family. Old Caleb's iron rule over his household was not to be broken. The spark of rebellion died as quickly as it had come. Furious though Tobe was, he would take the message to Wiederhold. But first he would hurry to Dr. Jonas Parker's house at McKenky's Ferry, and tell the good old doctor of the plight of the Harway family.

Presently he was again out in the cold night. But he no longer felt the bitter wind, for anger and hate and the exercise of getting wood for Mrs. Harway, starting her fire and making the wounded man comfortable had warmed his blood, and his thoughts were turned from the long, hard road that lay before him to the Harway's cold, bare, ruined home and the unconscious man.

As he drew near the ferry he heard the shouts of men rising above the roar of wind and water. Wondering what it meant, he quickened his pace, and as he came over the top of the hill that ran down to the ferry landing he caught sight of Doctor Parker standing outside the door of his house, unmindful of the cold, his gaze toward the river.

"What is it?" called Tobe.

The Doctor pointed to the ferry.

"Look down there and see for yourself," he answered. "George Washington's soldiers are coming."

Through the dark it was little that Tobe could see beyond a black mass of men on the river bank; but many wild sounds came to his ears—the crashing and crunching of ice, frantic voices, the neighing of frightened horses, the rumble of artillery wheels.

Tobe had no time to waste. "Ephraim Harway is dying," he said.

"Dying!" echoed the Doctor with a start. "Why, I passed there only yesterday morning, and he was as lively as a cricket."

Tobe explained hurriedly what had happened. "And take some blankets and food with you," he added. "They're freezing and starving."

The Doctor roared an oath. "If I were a younger man and had no sick neighbors on my hands I'd go with George Washington this night, and do my part in giving those rascals the lesson they deserve," he declared fiercely. "But this is no time to be talking of what I should like to do. If Ephraim Harway is dying I must be off. And you?" Over his spectacles he glanced inquiringly at Tobe. "Do you come with me? You might be of some help."

Tobe shook his head. "I have to go to Trenton," he answered, without thought of what he was saying.

The Doctor's eyes flashed. "Ha!" he cried. "You're made of the right stuff, lad, after all, in spite of having a Tory father. May good fortune be with you and with every man who is going to strike a blow for his country this night. And, Tobe, when you meet those Hessians bear in mind what they did at Ephraim Harway's house—make them pay."

Never had Tobe felt so thoroughly miserable. The blood rushed to his face, and he began to stammer an explanation. The Doctor, however, had already turned into the house to prepare for his journey, and the boy slunk away with a heavy heart.

He stood in the road, undecided which

way to turn. "I'll go and take a look at Washington's soldiers, anyhow," he concluded. "I can't miss such a *sight*."

As he went down the hill a company of men came marching slowly up. So close were they that some of them brushed against him as they passed, and even in the heavy darkness he could see their miserable condition. Many a one he saw whose only protection from the biting wind was a rifleman's frock of canvas over his shirt. One had bands of cloth wrapped about his feet to take the place of shoes; and others had shoes so worn and broken that they would have been better off, it seemed, if they had followed their companion's example. A ragged, half-frozen lot they were, who, after marching half the day over rough, snow-covered roads in Pennsylvania, must now wait without shelter for hours for the remainder of the army to cross the river before setting out on the long, cold march to Trenton. A ragged rabble indeed but somehow wonderful men.

A little farther down the slope he came to a group of soldiers asleep on the snow around a blazing fire. Bundles of rags and tatters they were, but the firelight played on the faces of hardened veterans, old Indian fighters some of them, shrewd, experienced, resourceful—faces molded by hardship and suffering. These were men, Tobe realized, that, however ragged they might be, were not to be despised in battle.

Soon he caught sight of the river—such a placid little stream in summer—now swollen high, a swift, angry torrent, black and menacing under the stormy sky. Far out in the broken, crashing fields of ice great Durham boats, heavily loaded with men, were moving slowly toward him. It was all the rowers, sturdy fishermen from Marblehead, could do to hold their crafts against the current and save them from being crushed by the great, surging ice floes, some of which rose five and six feet above the water.

As Tobe watched the landing of boatload after boatload, saw the grim, determined faces of the men, noted the patience of even the most thinly clad, and wondered at the energy and efficiency displayed by the officers, his opinion of the rebel army began to change.

"They may lick the Hessians yet," he muttered. "I sort of half wish they would." For the ragged rabble was fast becoming a band of heroes in Toby's eyes.

With a start, he recollected the letter in his pocket. The night was dragging on. It would not do to delay longer. He must warn Wiederhold that these rebels were coming. Yet the task that lay before him was more distasteful than ever now. The ragged, suffering men around him had roused his sympathy and admiration. And, as he thought of Samantha's doll, his blood rose against the hireling troops that held Trenton.

As he turned regretfully away from the river and made his way up the hill he came upon a soldier who had fallen exhausted on the hard snow. His blue, round jacket and loose, short trousers proclaimed him a shipman from Marblehead. A young captain ran up to the fallen man, and, finding that he was too far gone to be of further service that night, shouted orders to have him carried to the nearest house. Then, turning suddenly, he caught sight of Tobe, and looked him over sharply.

Very young this captain was, straight, slender, delicate, with yellow hair and piercing blue eyes. Tobe towered a good six inches above him.

"You're a fine, strapping young fellow," said the officer. "Why don't you join the army? We need boys like you."

"Never thought of it," said Tobe.

The captain's eyes flashed. "Do you realize that these men around you are fight-

ing for liberty—for their liberty and yours?" he demanded sharply.

"Little I know of what they're fighting for," answered Tobe. "But my father's loyal to King George, so I'm supposed to be, too, I reckon."

Another officer, also very young, came hurrying up to the little captain, and held him in animated conversation.

"Do you know who that was that was talking to you, youngster?" asked an old man at Tobe's elbow. "That's Captain Alexander Hamilton. And that lieutenant who's speaking to him now is James Monroe of Virginia. They're the two smartest young officers in the army. Neither of 'em more'n boys; Hamilton's nineteen, Monroe eighteen; but 'twould be a long search to find a man twice as old who'd be half the equal of either. I venture they'll both be big men in the world some day."

The Captain had turned from the Lieutenant to speak to a group of villagers. "Just listen to him," whispered the old man. "He's a wonderful talker, the little Captain." Then Tobe heard words that thrilled him, that made him realize for the first time the great crisis that was impending.

"The fate of a nation hangs in the balance this night," the Captain was saying. "The Revolution is at bay. The Colonies are disheartened. If we fail to capture Trenton our cause dies, our armies will melt away. If we succeed, if we lay hands on the rich stores of supplies of which we are so sadly in need, the news will rouse the country to our support. The hour of destiny is striking."

Tobe's thoughts were tumbling over one another in confusion. In a pocket of his coat his fingers were fumbling the letter to Lieutenant Wiederhold. That confounded message to Wiederhold! Was he going to carry a warning to those hireling soldiers of King George, who had brought such a tragic Christmas to Ephraim Harway's home?

Down on the river bank villagers and farmers were helping the tired soldiers to get the horses and cannon ashore from the boats. Here was a chance for Tobe to play a part in helping the cause of Liberty when every moment gained might save it from disaster. He thought of poor Ephraim Harway, lying unconscious on the cold floor, of his weeping wife, and of little Samantha, who mourned the loss of her Christmas doll.

"Drat the letter!" he cried. "By heck, I'll take my own time in getting to Trenton this night!"

He ran down to the crowd at the river, and soon he no longer felt the cold in the hard work of pulling up the cannon. He worked until his hands were blistered and his muscles ached, in fact until the night was almost over. It was four o'clock in the morning when the last boat was across, and Tobe, exhausted, went up the slope to watch the army form for the march.

Snow and sleet began to fall heavily, sweeping against the faces of the men. Those that had not formed in line of march crept closer to the crackling fires for a last chance of warming themselves. The storm was steadily increasing. The darkness, with its priceless advantages, was slipping away, and officers were bustling about trying to hasten the preparations.

"We'll give the Hushing no surprise this night," declared a grizzled veteran gloomily. "'Twill be broad daylight before we make Trenton, and they'll be up and ready for us."

"They'd be up and ready anyhow," mused Tobe, "if it hadn't been for what I found at Ephraim Harway's house."

Men were shaking their heads hopelessly as they realized there was no longer

a chance of delivering an attack under cover of darkness. Close by Tobe saw a grave, dark-haired, weather-tanned man sitting rigid and silent as a statue on a fine chestnut-sorrel horse surrounded by a group of officers. The flickering light of the fires showed anxiety and despondency on the faces of all.

The grizzled veteran pointed to the silent man on the chestnut-sorrel. "General Washington," he said under his breath. And Tobe's mouth gaped wide open as he stared at the American commander.

When at last the march had begun the snow had turned to hail, drenching to the skin the unfortunate soldiers who had no coats, and the wind howled as fiercely as ever. But, in spite of the dreadful weather, scores of men and boys from the village and the farms set off with the army, determined to go with it all the way to Trenton. They might be of some help, they argued, and some of them could go ahead and show the way. Some had guns of their own, and would fight if they were needed.

Almost at Tobe's feet a soldier fell exhausted. Tobe picked up the man's gun and trudged along with the column.

"I'm good with a gun," he told the men beside him. "Gimme a chance."

"Come on, lad," they called to him. "We'll need every man we can get who can shoot."

Tobe swelled with pride. He, too, could now strike a blow for Liberty. For the moment he forgot the letter to Wiederhold.

The heavy darkness began to lift, and before long the white steeples of Trenton appeared in the gray dawn through the mist and sleet.

Boom! Boom! Boom!

"That's old Knox's artillery," came a cry. A cheer rang out, and was taken up all along the column. Urged on by their officers, the men broke into a run.

They were fairly within the town before they came to a halt. In every street panic-stricken Hessians were pouring from the houses and hastily forming for action, but the roadways were fast being cleared by Colonel Knox's round-shot, and the enemy were seeking shelter wherever it could be found. From doors and windows and from behind stone walls and wood-piles their muskets blazed, and a shower of lead greeted the advancing Americans. A bullet whizzed close to Tobe's head. He jumped aside and stood trembling, but the old veterans around him laughed at him.

"Shoot, lad! Shoot!" he heard some one crying beside him; and he pulled his scattered wits together and brought his musket into action. His shaking nerves became steadier. The spirit of the soldiers was getting into his veins; and he fired again and again into a mass of Hessians who were making a stand a stone's throw in front of them. It seemed simple enough now—far easier than shooting birds or rabbits; and he no longer jumped when a musket ball came singing by.

Suddenly the Hessians broke and scattered.

"Give 'em the bayonet! Give 'em the bayonet!" came the cry; and the Americans, sweeping Tobe along with them, rushed forward.

But there was no need of bayonets. In all directions the Hessians, dazed and frightened, were laying down their arms. They had slept too late that morning after their Christmas festivities, and the suddenness and unexpectedness of the attack had overwhelmed them.

A few moments later a solitary shot rang out from an apple orchard, where a group of prisoners were under guard, and a man in the showy uniform of a

Hessian officer came running out from under the trees.

"Stop him!" cried a guard, catching sight of Tobe close by.

Tobe set off in pursuit of the fugitive. The chase led into a deserted lane, where the runaway slipped on the sleet-covered cobblestones, and fell heavily. So close at his heels was Tobe that he tripped over the fallen man.

"Ach! Himmel!" cried the Hessian, as they both struggled to their feet. "I am safe! It is der son of mein goot friend, Herr Tucker."

The man was Lieutenant Wiederhold. Wild rage took hold of Tobe as he recognized the officer. His thoughts flew back to the scene at Ephraim Harway's house. "You—you thief! You murderer!" he cried.

The lieutenant stared in blank astonishment. "Vat! You say dot, der son of such a goot friend of King George?"

"You're my prisoner!" roared Tobe.

Wiederhold turned to make another dash for liberty, but he was too late. Tobe sprang at him in fury, and bore him down. The Hessian struggled frantically, then gave a howl of pain as Tobe's big fist was driven with a smashing blow into his face.

"That's for what you did at Ephraim Harway's house!" Tobe cried, and he struck again and again, until Wiederhold, battered and bleeding, shouted for mercy.

"Get up!" ordered Tobe.

Slowly and painfully the officer rose to his feet. There was no more fight left in him, and he walked meekly along by his captor's side.

As they turned out of the lane a gray-haired man on horseback came riding toward them, his saddle-bags flopping noisily. It was Dr. Jonas Parker. Like almost everybody else for miles around, he had not been able to resist the temptation to come to see the humiliation of the proud Hessian army.

"Good for you, lad!" he cried. "This should be a great day for us all—a day that will live in history. And it means that all the poor folk that have been robbed by these Hessians will get their property back. There will be no more cold hearths and starving families. I've just come from Ephraim Harway, and you were wrong about his dying. He'll be as sound a man as ever before long."

Wild sounds came from all around them—the beating of drums and the cheering of crowds—and the old doctor, eager to share in the excitement, dug his heels into his horse's ribs and galloped off.

"Come on, you!" growled Tobe, with a tug at his prisoner's arm. "And—by heck! I clean forgot! Here's a letter for you. I'd have got here with it last night if I hadn't stopped at Ephraim Harway's house on my way to find you."

A Bird Hike With Dan Beard

OF course you all know that there are *good* germs and *bad* germs, or maybe you want to call them microbes. If so, then there are good microbes who travel through one's system with a scout smile on and a determination to do a good turn by kicking out all objectionable germs, such as the river rats and the other tough microbes who travel through one's system breaking all the window panes, so to speak, and making all the trouble they can. Doctors and physicians call the scout microbes antitoxins; they are the ones which resist disease and it is the aim of the scientists to fill one's system with antitoxins and thus keep out the evil microbes. That is the reason they vaccinate you, that is the reason they fill you full of all sorts of antityphoid and antidiphtheria, antibubonic plague serum and all that sort of thing. They do this to keep you from having all these horrible diseases which the tough germs delight to give you. If you have that straight in your mind you will understand me when I say that scout activities are antitoxins, mental antitoxins, antitoxins for the mind that drive out the evil toxins.



You see, it is this way: If a fellow's mind and heart are full of his scout law and the scout oath, birdlore, skylore, forestlore, camplore and hikes and good turns, there is no room for craps, cigarettes, "cuss" words and all that rabble of tough microbes which yearn to take possession of a boy's mind and soul.

We do not have to tell you not to swear, not to lie and not to steal. That is a waste of breath. We tell you to do these other things and then lying and stealing and swearing find no place in your system. When these enemies come to you and they find the gates of Babylon closed, and they are unable to scale the three hundred-foot high walls of clean thoughts, they go trooping off to find some poor little fellow who has never had the chance to be a scout and has left the gates of the city open and the evil germs swarm in and take possession. What a shame! A shame to the public because there should always be somebody on hand to help build up a high wall of scout character for this poor little victim and to guard the gates of his mind from tough germs.

When you go on a bird hike you are



all attention. Your ears are alert, your eyes are bright and keen watching the branches, the bushes, the grass, the sky and the water, and there is not a shadow of a show or room for evil thoughts. Without evil thoughts of course there is no temptation to do wrong. For instance, when you hear the loud cow—cow—cow! in the pine or spruce woods, there is nothing so important in your mind at that moment as the desire to catch a glimpse of the "cock of the woods," the pileated woodpecker, that great big rare bird with a black and white body, brilliant crimson crested helmet and a scarlet stripe at the base of his lower beak (mandible bill). Gee! to see him gives a fellow a real thrill, because one knows that one is looking at a bird, a wonderful and beautiful bird that one's grandchildren will probably never see, a bird that was once plentiful all over the United States when we had forests, but whose numbers have gradually diminished with the wiping out of our forest lands, until now this big woodpecker is rare even in the Adirondacks.

Last spring Councilor Frederick Vreeland and I ran away from work and went out to our old camping grounds in Pike County, Pennsylvania, for a hike. That was May 15th, but do not forget that the autumn is almost as good a time for a bird hike as the spring—the birds that go north in the spring come back in the autumn. In the two days' hike that we took through the mountain woods we saw many birds, among them a number of bluebirds.

When I was a boy every knothole in the clapboards of a frame house was occupied by a bluebird's nest. They are lovely birds and they are American birds, and their blood is as blue as their backs. Blue in this sense, you know, means the real thing, free from taint.

At the club we saw the barn swallows. They have taken possession of the Forest Lake Club piazza and refuse to be driven away by the servants. Off in the woods we could hear the "tiddle-de-link, tiddle-de-link, I've got him! I've got him!" and then a harsh note which told us that the blue jays were plotting to rob some of their feathered friends. Over Big Tink Pond



A Bird Hike With Dan Beard



and Wolf Lake the tree swallows were skimming and in among the lower branches of the trees the little Redstarts were flitting, reminding one of miniature orioles. The Maryland Yellowthroats were nervously hopping about, telling some one to "quit, quit," and then bursting into a nervous song, the words of which are "wichity—wichity—wichity!" The Myrtle warbler, with yellow spots on his crown, rump and breast pockets was calling "tchip" to us, although that is not our name. And the Canadian warbler, black-throated warbler, black and white warblers were all too busy catching insects to speak to us. We saw other warblers which we did not identify. They did not stay long enough for us to focus our glasses on them.

The purple finch is a gallant little gentleman among birds. He was making love to his modest sparrowlike mate, and he hopped along the branch sideways towards her, raised up the purple crest on his head, fluttered his wings and went through all sorts of polite and pretty ceremonial maneuvers, all the time talking in a low voice to his sweetheart, and she must have said yes, because he suddenly burst into a joyful song.

The Horsehair or Chippy Sparrow scarcely moved from his perch on a stone as we passed. The Flicker, Yellowhammer, Clape, Highhole or golden-shafted woodpecker, as you may choose to call it, beat a loud tattoo on the hollow tree, while the white-breasted Nuthatch hopped up and down the trunk of the same tree with as much ease as that displayed by a robin when hopping on the lawn.

We heard and saw the Song Sparrow and from the tree tops on the opposite side of the lake drifted the robinlike notes of the brilliant Scarlet Tanager. We heard and saw the Wood Thrush and his musical superior, the Hermit Thrush. The Olive-backed Thrush was hopping nearby and the Ovenbird was loudly calling, "Teacher! teacher! teacher!"

Near the waterfront in the high blueberry bush the Catbird was singing most wonderfully, but on the topmost branch of a balm-of-Gilead tree, the Brown Thrasher was outdoing the Catbird with the Catbird's own song.

The Crows were cawing overhead. The Towhee or Chewink was flitting around among the dead brush, while the rose-breasted Grosbeaks were to be seen in



groups of sixes and sevens, not singing but flocking together and talking matters over.

Before daylight in the morning the whippoorwill was singing and the writer counted a hundred and eighty-two repetitions of the word "whippoorwill" without stop or hesitation to take breath on the part of the bird. Two seasons ago we found a whippoorwill's nest near the Outdoor School camp, that is, if one may be allowed to call any old place a nest when there is no semblance of a nest about it. The eggs, two of them, were laid on the brown leaves in a little open space amid dense underbrush and thickly set trees. The eggs were dull white in color, with indistinct markings of lilac hue and a few dingy gray and dirty brown spots on them.

The whippoorwill is a night watchman. He comes on duty when the other birds go to roost, and if it is a moonlight night, he keeps up his song as long as the moon shines, but if it is a very dark night he is quiet, until the faint gray light in the east, known as the Wolf Brush, streaks the sky, and announces the coming dawn, then he wakes up with a start and proceeds to wake every one else up also.

The way to find a whippoorwill's nest is to walk along through the woods every day for a week at a time—maybe it will be necessary to keep it up for years—but by and by you will be startled by a large bird suddenly and silently flying from between your feet, flying with not so much as the sound of a whir or flap of a wing as the phantomlike bird disappears, leaving you standing there with a creepy sensation because the whole thing is so mysterious. But when you look down between your feet, if your eyes are sharp, you will see the prize for which you have been searching—a real whippoorwill's nest, marked by two eggs lying on the top of a flat stone in the midst of a path or on the brown leaves.

This old whippoorwill of Pike County hatched its young, but, bless your soul, the young were just as difficult to see as were the eggs. The babies are fuzzy little things of a reddish brown color. When the old bird would fly away she would kick her babies over, either accidentally or on purpose, and the little fuzzy brown whippoorwills would lie on the brown leaves, sprawled out just as mamma had knocked them! They would not move a feather, if the hairy stuff covering them could be called feathers, nor would they bat an eye. They were as immovable as the dead leaves upon which they sprawled. When one had one's nose almost touching them, it was hard to tell the little birds from the other brown trash strewed on the forest's floor.

All right, boys! we will give you one point for a crow, one point for a robin, one point for seeing and identifying a catbird, one point for all the common birds, three points for a hermit thrush, four points for a veery, fifteen points for the pileated woodpecker and fifty points for the whippoorwill's nest! Now see who will win out on the next bird hike!

When I was a lad the call or cry that the boys used to rally by was one they had inherited from their pioneer ancestors, and the pioneers borrowed it from the Indians, and the Indians borrowed it from the barred owl, and the barred owl borrowed it from some ancient witch or banshee. The barred owl, you know, is the fellow who startles you when you are in the woods by shouting, "Who! who, hoo-whoo, whoo-ah!" but it is too long a call for the boys, so they blue penciled it all but the end cry of "Whoo-ah!"

When Mr. Vreeland and I were walking along the edge of Wake Robin Swamp we discovered the old barred owl sitting on the branch with his back against the skies. He is a mean old cannibal, who

catches and eats his cousins, the little screech owls. He is the old hobgoblin of the woods, and he can frighten the liver right out of a tenderfoot.

While we were over by Buckskin Cove, across Big Tink Pond, Mr. Vreeland had his glasses focused on some warblers, but I was interested in a stealthy, quiet bird I caught sight of as it was standing on a half submerged stone at the edge of the lake. The bird was identified as a solitary sandpiper. It was feeding at the time, sticking its head under water and searching for such aquatic creatures as snails, tadpoles or bugs that he apparently found there.

Among scientists this sandpiper is known as Helodromas Solitarius. He has a straight, slender bill, with the upper part grooved over half its length; the outer tail feathers and tail covers are white, barred with dusky bars; he is also spotted and barred under his wings, and measures about seven and a half inches long. The solitary sandpiper breeds up in the northern part of the United States and with the idle millionaires and swells he goes down to the Gulf Coast to spend the winter. The sandpiper is a very polite bird. As soon as he sees you he will salute by nodding his head. He seems to be proud of the markings on the under side of his wings, for when he alights he will hold his long wings stretched upwards, so that one may see and admire the pretty markings before the wings slowly and gracefully fold upon his back, and he interests himself in the search of food.

Another splendid bird we saw, the Ruffed Grouse, a real good American bird, a splendid game bird, a proud creature who spreads his tail like a turkey cock and struts around before his mate displaying all his attractive clothes. He is also becoming a rare bird, for we kill and drive away our Ruffed Grouse and supply their place with stupid Hungarian Partridges or brilliantly colored Pheasants, which properly belong in the barnyard. We have almost exterminated our Western Prairie Chicken, and we long ago exterminated those which once inhabited Long Island. The other representative of the Prairie Chicken, at Martha's Vineyard, is scarcely able to breed fast enough to supply the native cats with food.

Oh! there are lots of things to see on a bird hike in the autumn, in the winter, in the spring and in the summer! Look to see what you can discover, borrow the power of observation of our good old friend, John Burroughs, borrow the enthusiasm of Roosevelt, the sentiment and thought of Thoreau, the soul of a poet and the eye of an artist, and then every walk you take will be a journey through a land of enchantment where nothing evil can live.



Think and Grin

Edited and Illustrated

By Frank J. Rigney

Sure, He Can

Joe: Even a policeman cannot arrest the flight of time!

Pete: Can't he? Why, only this morning I saw a policeman go into a store and stop a few minutes.



The Tenderfoot limped into camp.

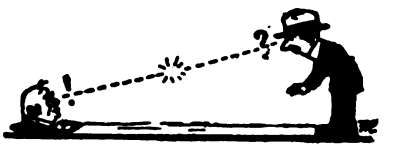
"What is the matter?" asked the Scoutmaster; "do your new shoes hurt?"

"No," replied the tenderfoot, "but my feet do."

Understand

"Now boys," said the schoolmaster to the geography class, "I want you to bear in mind that the affix 'stan' means 'the place of.' Thus we have Afghanistan, the place of Afghans—also Hindustan, the place of Hindus. Can any one give another example?"

Nobody appeared very anxious to do so until little Johnny Snaggs, the joy of his mother and the terror of cats, said proudly, "Yes, sir, I can. Umbrellastan, the place for Umbrellas."



Undisturbed

Inquisitive One (to old gentleman sticking in a coal hole): Dear me. Have you fallen through the coal hole?

Old Gentleman (with a gleam in his eye): Oh, no, indeed. I happened to be here when the road was built, and so the workmen, unwilling to disturb me, merely built it around me!

Overlooked

"Harry," said Mother severely, "there were two pieces of pie on the shelf this morning, and now there is only one. How does this happen to be?"

"I don't know," said Harry regretfully. "It must have been so dark that I didn't see the other piece."

Think and Grin

Lived Happily Ever After

One of the novelists referring to his hero says:

His countenance fell,
His voice broke,
His heart sank,
His hair rose,
His eyes blazed,
His words burned,
His blood froze.

It appears, however, that he was able to pull himself together and marry the girl in the last chapter.

Wrapped Up In Itself

Teacher: Who can tell me what a cow's skin is used for?

Sammy: I kin, teacher! It's used to keep the cow's meat in.



Hot

Jim: My pinchers are mad to-day.

Dick: How is that?

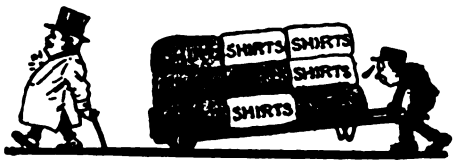
Jim: Why I left them in front of a fire and they lost their temper.

Overtime

Tenderfoot: When the clock strikes thirteen, what time is it?

Second Class Scout: I really don't know. What?

Tenderfoot: Time for the clock to be fixed.



A Shirt Tale

The scoutmaster was talking to one of his tenderfoot scouts. "Boy," he said, "you will have to make your own way in the world some day. Do you know the meaning of energy and enterprise?"

"No, sir," replied the tenderfoot, "I don't believe I do."

"Well, I'll tell you. One of the richest men in the world came to this city without a shirt on his back, and now he has millions."

The tenderfoot looked puzzled. "Millions?" he repeated in wonderment. "Why, how many does he wear at a time?"

Camp Wits

First Class Scout: What is it that always goes with its head downward?

Tenderfoot: Give it up.

First Class Scout: A nail in your shoe.

Tenderfoot: Now, Mr. First Class, answer this one, What is that which by losing an eye has nothing left but a nose?

First Class Scout: You've got me.

Tenderfoot: Noise.

Absolutely

Uncle: Only fools are certain, Tommy; wise men hesitate.

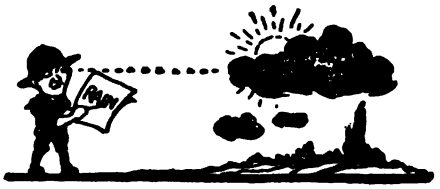
Tommy: Are you sure, Uncle?

Uncle: Yes, my boy; certain of it.

Think and Grin

Chicken Picking

"Is a chicken big enough to eat when it is three weeks old?"
"Why, of course not!"
"Well, how does it live, then?"



But is it Fair?

Said the weather prophet, "I think it is safest always to predict bad weather."
"Why's that?"
"Well, people are ready to forgive vou if you turn out to be wrong."

The Pain Remains in Spain

Second Class Scout: If Germs come from Germany and Parasites come from Paris, what comes from Ireland?
Tenderfoot: Search me.
Second Class Scout: Mike Crobes.

Take it From Me

What is it you must keep after giving it to some one else?—Your word.

Useful

Teacher: Hawkins, what is a synonym?
Hawkins: Please, sir, it's a word you use in place of another when you cannot spell the other one.



Last

The Scoutmaster: "Bill's been better today, he's only broken one plate, so far!"
The A. S. M.: "How's that?"
The S. M.: "Well, you see, it was our last one!"

Not So Down In the Mouth

Joe: Did you get much relief when you went to the dentist?
Jim: Yes! The dentist wasn't home.

A Hot One

Scoutmaster: Let us climb the spiral trail.
Scout: Whew! The last time I climbed it it was perspiral.

100%

Jimmy: Father, yesterday at school I made 100 on my studies.
Father: That was fine, what study did you make it in?
Jimmy: 50 on Spelling, and 50 on Arithmetic.

Quite So

What is the difference between pneumonia and ammonia?
Pneumonia comes in chests and ammonia comes in bottles.

Think and Grin



Some Artist

Teacher: That's the best drawing you have ever made.

Student: Glad you like it.

Teacher: I don't.

Just Passing

Passerby: Well. How is business to-day, boys?

Tailor: Oh, just sew, sew.

Dentist: Down in the mouth.

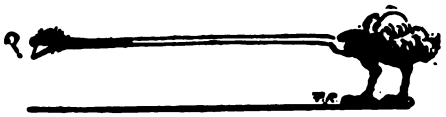
Watchmaker: Mine's winding up.

Office Boy: Mine's picking up.

Farmer: Growing.

Druggist: I'm dispensing without help, to-day.

Passerby passed away.



Un-natural History

Second Class Scout: Why does an ostrich have such a long neck?

Tenderfoot: Because its head's so far from its body, I guess!

Tut-tut

"A piano may be upright and square, but that is no guarantee that it will not give out bad notes!"



Puss-Puss

There was a young man from the city,
Who saw what he thought was a kitty,
He gave it a pat,
And soon after that,
He buried his clothes, what a pity.

A Bunch of Keys

What key is the hardest to turn?
(A donkey.)
What key is the most amusing?
(A monkey.)
What keys are the brightest?
(Yankees.)
What keys do we like to eat best?
(Turkeys.)
What keys are used in prisons?
(Turnkeys.)
What key should you never touch?
(Whiskey.)

Wash

Ma: Why didn't you wash your ears Johnnie?

Johnnie: You only told me to wash my face, and I didn't know if my ears belonged to my face or my neck!



Climbing the Scales

Bill: Do you play on the piano?

Will: Not when maw's around. She'd be 'fraid I'd fall off.

Think and Grin

Difference

What is the difference between a hill and a pill?

One is hard to get up and the other is hard to get down.

Natural History

Where is the home of the swallow?

In the stomach.

Salt, Too

First Class Scout: Most things go to the buyer, but some things don't.

Tenderfoot: What do you mean?

First Class Scout: Why, coal goes to the cellar.



Post Crop

Tenderfoot: Say, First Class Scout, how is your garden coming?

First Class Scout: Well, my peach trees are all dead, but one of my fence posts is budding!

O

Pupil: I don't think I should get zero on this paper.

Teacher: Well, I don't either, but that's the lowest I could give you.

Gently

First Class Scout: A grinding application of the brakes does a car no good.

Second Class Scout: In other words, you've got to handle a car as you would bad news.

First Class Scout: Eh?

Second Class Scout: Brake it gently.



Not Sick

First Boy: Is Billy ill, Sammy?

Second Boy: Well, he ain't ill exactly, but no stummick can stand thirteen pies. It's an unlucky number.

Answered Fully

Teacher: Can any boy tell me three food essentials required to keep the body in health?

There was a silence in the class till a Tenderfoot scout held up his hand and replied: "Your breakfast, your dinner and your supper!"

A Scout Is Thrifty

Question: What do you do with your shoes when you wear them out?

Answer: I wear them back in the house again.

Just to Know

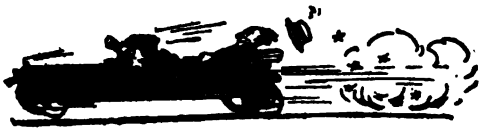
Shopkeeper: What can I do for you, my boy?

Boy: Please, I've called about your advertisement for a man to retail canaries!

Shopkeeper: Yes, and do you think you could do the work?

Boy: Oh, no, sir; but I only want to know how the canaries lost their tails.

Think and Grin



Heat

Why do you call a fast automobile rider a scorcher?

Because he goes out at a hot pace, makes pedestrians boiling mad, warms up the police, gets roasted in court, and calls it a burning shame.

Turned the Job Over

From a report of good turns by a Baltimore scout:

"Monday—I bought a newspaper for a lady.

"Tuesday—Went on an errand and bought a paper for a lady.

"Wednesday—I bought a paper for a lady.

"Thursday—I got a boy to serve papers to her regularly."



Going Too Far With the Contact

Scout Brown: This electric lighting is all right in the school house, but they are going altogether too far.

Father: How's that?

Scout Brown: I heard the contractor say that there was to be an electric switch in every room.

Jyolk

First Class Scout: I ate three chickens to-day.

Tenderfoot Scout: Gee whiz! Honest? Roasted or fried?

F. C. S.: Boiled in the shell.

A Cent

Our principal was telling us how to avoid congestion at the end of periods. He said: "Now, the north stairs are to be used for ascent, and——" A boy interrupted, "Shucks," he said, "I'd rather use the south stairs and save my cent."

Still Some to Go

Stranger: Have you lived here all your life?

Tenderfoot: Not yet, sir!

"Time! Seconds Out"

Scout: Shall I mark time with my feet?

Scoutmaster: Did you ever hear of marking time with hands?

Scout: Clocks do.



His One Chance

"I believe," said the impatient man as he put aside the telephone, "that I'll go fishing."

"Didn't know you cared for fishing."

"I don't ordinarily. But it's the only chance I have of finding myself at the end of a line that isn't busy."

A Rare View

Joe: If you could see a dog's lungs what would you see?

Jim: I dunno.

Joe: Why, you would see the seat of his pants!

Meet-Meat

They met on the bridge at midnight;
They'll never meet again,
For she was a cow east-bound
And he was a west-bound train.

The Curiosity Shop



By Francis Arnold

"Finger Prints" of Wild Animals

PUDD'N head Wilson, Mark Twain's eccentric character, was an expert on finger prints, but he never tackled a job such as was undertaken by two Cleveland, Ohio, scoutmasters.

The tracking of wild animals is one of the most interesting of pastimes, but difficult, for even if a scout does get into the country when the ground is covered with a tracking snow, he may not be able to identify the tracks which he finds, for lack of experience.

A while ago Dr. Valway and Mr. Chester H. Childs, scoutmasters of Cleveland, Ohio, took the fingerprints of animals in the zoo there, in order that the scouts might have a chance to see what their tracks were like. They were "Sunshine," the grizzly bear, the star attraction, opossum, lions, and last but not the least noticeable, skunks.

Tablets of pipe clay were placed where the animals would step on them.

What's Up In the Air?

It is common to find many dead birds in the morning about the base of any powerful light. It is not unusual to catch a glimpse of some strange bird on a tree or bush which is never seen at any other time of the year. This indicates the immense number of birds which are flying above our heads at great altitude on their way southward. The first birds to migrate are the insect-eating birds which fly when the leaves fall; next in turn are the seed-eating birds. The birds as a rule fly at night and come to earth in the daytime for food and to rest. During a frost recently over one million sparrows were killed in one section of the West, which suggests the enormous number of birds which are passing above us. The year to year travel of many of these birds exceeds five thousand miles.

Rubber Is Native of America

What boy has not enjoyed the story in the Arabian Nights in which a magic tent which may be carried in the hollow of the hand unfolds until it covers a great army? The story is outdone by the man who carried the seeds of the rubber tree from America to the Far East. The rubber tree is native to America and for centuries could not be transplanted. Finally an English naturalist managed to carry a few handfuls of seed across the Atlantic and raise a few rubber trees in a London

green-house. Later these were carried to the East Indies, where the trees grew until to-day an area larger than the state of Ohio is covered with rubber plantations. The germs of this great forest, like the magic tent, sprang from a very small beginning. It is interesting to recall that the germ of all the rubber which to-day supplies tens of millions of automobiles with tires was once trundled through the streets of London in a hansom cab.

New Diving Device

It may soon be possible to recover the enormous wealth which lies in sunken ships at the bottom of the sea. In the past, when the treasure lay too deep to be reached by divers, it had been abandoned. Most wrecks, it is estimated, lie within 200 feet of the surface. The Lusitania lies 240 feet down. Maps have been prepared showing the location of more than 4,000 wrecks most of which contain cargoes which would not be destroyed by water. It is estimated that the loss from wrecks during the war was over six billion dollars. Every 25 years the wrecks are equivalent to all the tonnage afloat throughout the world.

Gales Made to Order

Everyone has been thrilled by the pictures taken during wind storms we often see in the "movies." It may be guessed that the wind storm is especially manufactured for the purpose, but few of those who see the picture realize the difficulty of the work. The currents of air stirred up by ordinary electric fans would not answer. The air must be often set in motion by great fans or blades larger and more powerful than those which drive great aëroplanes. When these machines are used in the studios they are driven electrically. But the really severe wind storms must be stirred up out of doors. Some of the machines used for the purpose are equipped with fans which can make as many as four thousand revolutions to the minute, and can create a seventy-mile gale. The wind thus generated will destroy ordinary frame buildings.

"Babe" Ruth's Force

It is estimated that "Babe" Ruth of baseball fame exerts a force equal to 4,000 horsepower in hitting a home run. This enormous force is of course exerted for a small fraction of time. Some very interesting points in physics are involved in the process of knocking a home run. If the bat and the ball were inelastic, even this hitting power would only result in the ball falling to the ground. Since the ball and the bat are highly elastic there is an enormous rebounding force. The weight of the ball and the bat of course largely control the flight of the ball. It is really a very complicated problem considered scientifically. If all the factors involved were expressed mathematically in an equation it would take a college professor to work it out. The crowd in the grandstand seem to prefer "Babe" Ruth's direct method of solving it.

Snapping the Whip

Most of us have enjoyed the game of "snapping the whip" and the exhilarating sensation of finding oneself at the tip end of the whip. An ingenious mechanical device has been invented which works on exactly the same principle and affords much the same sensation. In the game a number of children joined hands and after a rapid run, the boy at one end of the row stood still and allowed the others to swing rapidly about. Those at the extreme end

of this radius found themselves often swung through the air with surprising velocity. In the mechanical device a series of cars, provided with seats holding two or three people, are attached to a chain which moves about an elongated ellipse. The cars slide on rollers over a smooth surface. They move quickly along the side of the ellipse but on rounding the ends the cars swing out exactly the same as boy or girl at the end of the line in the old game. A spring is attached to take up the force of the recoil and save the riders from too severe a bump.

Lifting Oneself Aloft

An interesting scientific problem is involved in building a steel mast 300 feet in height. The erection of high powered, long distance wireless telegraph stations has led to many interesting experiments in such construction. To build such a mast on the ground and then raise it to a perpendicular position would involve an immense amount of work. A common plan is to construct the mast of a series of hollow cylinders about 20 feet in length. A steel rod is fastened inside a cylinder from which is suspended a platform on which the workmen stand to fasten the cylinders together. When a joint is completed the rod is raised about 20 feet and the platform pulled upward to the desired height. A single mast may consist of as many as fifty such cylinders. When the last one is put in position the workmen find themselves swinging some 300 feet in air.

Age of Earth

The latest estimate places the age of the earth at one-half a billion years. There has been much difference of opinion as to the age, the estimates often differing by hundreds of millions of years. The geologists working on modern theories about energy and heat find that one hundred million years ago the earth formed itself into the compact mass as we know it to-day. By estimating the rate at which the earth cools, it is now decided that the temperature of the globe fell to a point between forty-five degrees and zero about two hundred and fifty million years ago. At this time, the moon was probably a little sun which helped to warm the earth. A careful examination of fossils leads to the belief that men have walked upon the earth for at least two hundred thousand years.



The Taking Off of Thundering Billy Blue

By
James F. Taylor

Illustrated by
Bert N. Salg



Who should step out but the little man in the admiral's clothes

TOWARD the end of the governorship of Sir Henry Morgan, a man named Isaac Tooke, a buccaneer, was brought ashore in Jamaica shaking with a calenture and fever of the brain. They would have hanged him at once, ailing and all as he was (for although Morgan had been the cruelest of all the buccaneers, when he became governor he was much harder on them than an honest man would have been), had it not been for the fact that he brought news of the taking off of Thundering Billy Blue, the man above all others Morgan wanted to get his hands on. So they nursed Tooke back to health, and he lived to become a credit to the community; serving as a horrible example to all boys who wanted to run away to sea and lead the wild, riotous life of the Brethren of the Coast.

Now the manner of Thundering Billy's taking off was as grim a piece of business as ever took place on the Spanish Main, where grim happenings were as common as sparrows on a country road. There were some that professed not to believe Tooke's story, and that called him a liar; but those that knew best the ways of sailormen and the sea, said there was no doubt about the story's being true; for if ever a man deserved eternal torment it was Thundering Billy, and Davy Jones had paid him out according to his deserts.

You must understand here that Davy Jones stands in the same relationship to sailormen as the Accuser of the Brethren does to landsmen—that is to say, he is the Lucifer of the salt sea, and the ultimate port of all sinful sailors. Understanding this, we shall let old Tooke tell the story

Taking Off of Thundering Billy Blue

he told to the authorities in Jamaica, and which he always told afterward, with an air of relish and truthfulness, to any who would listen to him.

I shipped with Billy Blue (he would say, taking the long clay pipe from his mouth) in the year of 1682. Hispaniola was where Billy careened his vessel and buried his loot, although sometimes he shifted to Tortuga. The rest of the time he kept to the seas, except when he was murdering, and pillaging, and spreading terror and destruction along the coast of Honduras or Venezuela, or maybe the south side of Cuba. He was wanted on every hand even in those days. The French would have liked to have had the hanging of him, and so would the English, for he preyed upon all without favor; and as for the Spaniards —if the Spaniards had ever laid hands upon him they would not have left a bone of him for the fowls of the air to pick. Billy knew all this, and for that reason showed mercy to none. Hated he was, from one end of the Americas to the other —ay, and feared, too. And with good cause, I trow.



I shipped with Billy Blue in the year of 1682

Billy Blue was the sort of man you would be feared to look twice at. A thundering great villain he was, burned the color of mahogany by the sun, his little blue eyes looking colorless in his black face. Whiskered he was too, like the tail of a horse, and would spend half the morning curling them, and then loop them up behind his ears with bits of bright ribbon. He had a gallows tatooed upon his chest, and one on the back of each hand; and whenever he came ashore he'd renew the color of his trousers by sousing them in bullocks' blood. He had a broad leathern belt about him stuck full of pistols, and a tremendous cutlass by his side, and heavy gold earrings hanging from his ears, and a way with him, sharp and fearful, like a crack of thunder overhead. When he was in a tantrum (and then God defend those that came anigh him) he chewed glass till the blood ran upon his beard; and when he went to scuttle a ship he blacked his face with soot and stuck burning slow matches beneath his hat to give him a more terrifying appearance. Such was Thundering Billy Blue, the Buccaneer.

It was a blessed dispensation for the people who traded upon those southern seas, or dwelled anxiously upon the coasts, when Thundering Billy was made off with —and the manner of it was this.

Billy Blue, and I along of him, left the island of Hispaniola bound for Maracaibo, on a fine November day in the ship, the *Golden Calf*. I was a gun layer, Billy was the Master. Seventy-five miles out what did we see but a Spanish galleon, under all sail, bound east, and loaded, as we thought, with bar gold and Spanish pieces of eight. Up went the helm, and after her went we. The Spaniard fled like a rabbit before us, leaping sometimes like

a stag, and sometimes burrowing into the bursting seas as if she would like to hide behind them. But she never had a chance, her with her lofty fore and aft castles and all, and we overhauled her hand over hand. Then we laid her aboard, and the guns banged, and the cutlasses came rasping out of their sheaths, and you'd sneeze with the sting of the powder in your nose. Up we went over her side, then, using the open gun ports to climb by, and cleared her decks with a rush. There was, maybe, a score of Spanish soldiers left alive upon the deck, and these fought to the last. But Thundering Billy cut them down like so many cattle until there was but one left alive, and he lying on the deck, sorely wounded. An old man he was, with snowy hair and whiskers, and venerable and good looking, like a churchman. Well, when the old man saw how things stood he raised his head and asked Billy, for the love of Heaven, to give him a drink of cold water.

At that Billy burst out in his hoarse, roaring laugh, and swore a great oath that he'd give him better than water. Then he filled a pannikin with rum out of a bottle he kept always by him, and set fire to it, and offered the old man the burning spirits when he knew the poor creature's throat ached for a drop of fresh, cool water. And when the man put the rum away from him, and again asked for water, Billy guffawed louder than ever. Then the Spaniard, at his last gasp, raised himself on one arm and laid his dying curse on Thundering Billy—cursed him with the most horrible and heart shaking curses, from that time forward for all ages, and all that should come after him to bear his name.

"Rum!" he finished, in a terrible voice. "I ask for water, and you give me rum—burning rum! So be it. Rum began your downfall, and rum shall be its black end!



Oh, a rare bird was Billy Blue!

For the day will come when you will sell your most precious possession for rum, and condemn your vile soul to torments everlasting. I, who am on the brink of eternity foresee your end and tremble at its frightfulness!"

With that the old man clapped both hands to his throat and fell back dead upon the deck. But Billy, nothing daunted, picked him up and heaved him over the side, and after him all the Spaniards that remained on the ship—wounded, and living, and dead. That was Billy's way ever. When the fight was over, Billy always collected all the unfortunates he had captured, wound his tremendous arms about them and pitched them over the side, and then looked over after them, shaking with merriment, to see the size of the splash they made. Oh, a rare bird was Billy Blue!

Well, he sacked and scuttled the Spanish ship (disappointed to find her laden with

nothing very valuable) and bore away again for Maracaibo. But it was not to be. A curse had been laid upon Thundering Billy and we began to see the fruits of it immediately. Before nightfall two men-o-war sighted us and gave chase, and drove us to the east'ard. All that night they hung on, and all the next day, and the next night as well; but on the third day they gave up and stood away to the nor'ard. At nightfall Billy gave orders to put the ship about and beat back the way we had come; but before his orders could be carried out the wind died and we lay becalmed on the face of the sea.

I have hardly the courage to recall those days even now. Day after day, and night after night, for weeks, there was not enough wind to flutter a pennant or lift the soft hair on the head of a girl. There we lay as if rooted to the floor of the ocean. The sun melted the pitch in the decks by day, and by night the moon whitened the masts and herded the shadows behind the sails, and looked so near and so big we were feared to look at her. And always the water about us kept heaving in long, greasy folds, horrible to see.

Our provisions began to get low and our fresh water to give out; but what was worse for Thundering Billy, he had drunk the last of his rum and was on the verge of madness in consequence. No man dared go anigh him, and we fled at the sound of his footstep. All day long we could hear him in his cabin roaring with rage, and smashing things left and right like a bull in a china-shop. Sometimes he came upon the poop and stamped up and down like a lunatic with his earrings jangling like little bells. Or he would stand still, driving a great ugly dirk into the fife-rail, and drawing it out again with his teeth, stopping over and again to shake his head at the blinding sun as if he could have knifed it to the heart.

At last one day he staggered up on the poop, his eyes wild in his head, and his mouth open, and his lips black and swollen with his burning, consuming thirst.

"Rum!" says he, hoarsely, leaning against the fife-rail, and passing his forefinger between his collar and his throat—"Rum! A drink of rum, and may Davy Jones fly away with my carcass!" And then he shook his big red fists at the blazing sun, and glowered at the high, pitiless brassy sky, and the blinding, dancing, glittering sea.

"Ahem!" says a voice at his elbow.

Billy whips round on the instant, and was amazed to see a little, old, sea-faring man, in the blue and gold of a proper admiral, standing by his side.

"Who in thunder invited you aboard?" roars Billy.

Then he got a good look at the little man and a sort of cold grue came over him in spite of the heat of the sun. That little man was not the sort whose company you'd like. I saw him that day myself, and once afterward, so I can describe him very well. He was little and dry and shriveled, with a rimey, clammy look to him as if he had been pickled in the salt sea since the morning of the world. He had a great brass-bound hat upon his head, and a pigtail hanging down his back wrapped in the skin of an eel. He had long, claw-like hands that made flickering and furtive motions towards Thundering Billy's beard, and a thin, sharp-pointed face, wrinkled with a thousand wrinkles, and a mouth that was drawn between a sneer and a snarl. But his eyes was the most terrible part of him. Dull they were, and dead, and filmed over like a fish's—no not like that either, but like a dead man's, as I have often seen; lusterless and

lifeless, and without hope, or love, or goodness.

"Who the deuce are you?" asks Billy, in a quieter tone.

The little man waved an arm toward the sea, and then pointed to the four points of the compass.

"I own all that," says he. "I am the lord of all this part of the world. This is my domain: all the blue sea, and everything under the sea, and some of the ships upon it, and—ha, ha, ha!—a good many of the sailor-folk in them, but I heard you mention rum," says the little man.

"You did!" roars Billy, his courage and his thirst coming back upon him at the mention of the liquor. "You did. And if you have any——"

"What would you be willing to pay for it?" asks the little man.

It was not Thundering Billy's way to pay for anything, and he was about to say so, when he took another look at the little man, and changed his mind.

"Gold!" answers Billy. "Beautiful yellow gold as men have shed their blood for."

"No gold for me," says the little man. "My place is overstocked with it now. Something more valuable than gold, Billy Blue, or no rum for you ever again."

"You have my name very pat," exclaims Billy in surprise. Then he adds: "There is nothing more valuable than yellow gold, and if you think to fool with me, Thundering Billy Blue——!" and he whips out his dirk and balances it in the palm of his hand.

But the little man only smiled—or sneered, I can't say which—and held up one hand, which glistened with patches of white, like salt.

"Would you give your life for rum?" says he.

"I would!" booms Billy.

"Ah, but your soul?" whispers the little man.

At that Billy threw back his head and roared with laughing. "My soul!" he shouted. "Ha, ha, ha! I doubt if I have one!"

"I doubt it myself," says the little man; "but I'm curious to find out."

"My soul!" repeated Billy, wagging his head so that the jangling earrings flipped forward and struck him on the cheeks. "Ha, ha! For a cask of rum I'd let Davy Jones fly away with my soul this instant—with fifty of 'em if I had 'em!"

"Done!" exclaims the little man, rubbing his hands together, and again, "Done! Good enow. But see here. Fair is fair, Billy. You've always been a good friend to me, and kept my locker well supplied, you have, Billy Blue. I'm a man remembers a friend, I am. Now I'll tell you something and give you a warning. I won't collect my half of the bargain at once, as I could—that'll keep for a while longer; but this I'll tell you: don't you ever get the island of Tranto under your lee, Billy, or I'll collect my half of the bargain on the spot. Now mind! For you the name of the island of Tranto is death."

"See here!" thunders Billy, "I don't know who you are, or where the island of Tranto is. But I won't be warned off any blooming island of the sea by you or anyone under Heaven! Stow that guff, and deliver the rum you talked of, or I'll slit your gullet like a——!"

"You'll have the rum," interrupts the little man, "immediately after I leave the ship—if you behave."

At that Billy put up his knife and began to lick his lips. Then he turned to the stranger again.

"Well," says he, "if you say so, I'll not let a peep out of me till the liquor comes.

Only let it be soon! And by the way, what might I call you?"

"What might you call me?" says the little man. "Well, you might call me Davy."

"Davy? Davy what?" booms Billy.

But the little man had disappeared into air (or so it seemed) and there was a cask of rum knocking against the side of the ship. I'll never pretend to say where it came from, but there it was; and Billy had it aboard in a twinkling.

Well, a main time he had that night. He roared and danced and sang, and capered like a bear round and round his cabin, and three times set it afire. Three times he did it, and each time broke us out of our sleep to come aft and put the blaze out. And each time when we had done so, he drove us out of the cabin and along the decks with a bared cutlass in his hand, shouting and leaping in hilarious, drunken mirth.

With the next morning came a wind, freshening as the light grew, and by high noon of the day we were tearing to the westward like a dun deer, the wind humming and singing in the rigging, the sails bellied out as stiff as iron, and the decks and masts dripping with the flying, sparkling spray.

For three days that kept up, and we sang and danced with the joy of life. On the fourth day the wind abated and a fog came down—a gray, choking mass that dripped like a dirty rag. For two days more we ran through that fog, making a good deal of leeway, and not having a very clear idea of where we were. But toward the evening of the third day of fog the lookout heard the sound of breakers. Directly afterwards the fog rolled off, and there was a little island under our lee. A small island it was, as I have said, and bare of any vegetation; big bowlders were scattered about at the water's edge, and behind them a hill rose abruptly and ran up to a height of about fifty feet, with a flat space at the top like a little table-land. We were close inshore, and between us and the beach a strip of water frothed and boiled where a reef was.

Billy was walking the poop at the time and he sings out with a pair of oaths:

"Does any son of a double Dutchman here know what place that is?"

There was a man aboard who had seen the island before, it seems, and he sings out in answer:

"That there is Tranto, sir."

"Tranto!" bellows Thundering Billy; "Ye lie, ye swab!" And he picked up an iron fid and hurled it at the man. He had no time to do or say more, for the *Golden Calf* was drifting inshore as fast as a running tide could take her. Then there was the mischief to pay aboard. Thundering Billy ranted and raved till he foamed at the mouth, and we worked like fiends to get her off into open water. It was no use. No seamanship in the world is stronger than Davy Jones; and it was he was at the back of that you may be sure. We even tried kedging; but with the same result. All our lines parted like strings. Then we struck. Struck on the reef with a crack like a breaking plate, which tore the bottom out of her and rolled her over on her side. There was only time for us to grab whatever spare lumber came to hand, and to go over the side like so many rats.

But the tide that had destroyed the ship, served us very well now, and presently we all set foot upon the shelving beach. Billy was the first of us, with the water running in rills from his scarlet trousers, and from the ends of his whiskers and pigtail. Most outrageous he acted now, and stamped and raged and bellowed, and threatened bloody death to everybody in the world. We all drew in a knot away from him, for we

knew he would slit all our gullets without giving it a thought—either before or after.

Well, when he was in the middle of his raving, who should step from behind a bowlder but the little man in the Admiral's clothes. His hat was on the back of his head, and his hands were thrust under the skirts of his coat; and under his left arm he carried a long brass telescope, much corroded with sea water, and as green as if it had just been fished up from the floor of the ocean. There he stood, and spread his feet apart, and put his head on one side and looked earnestly at Billy Blue out of his dead, fishy eyes. And then he nodded his head and smiled. That smile was not a pleasant thing to see. More like a snarl it was, with the upper lip drawn high under the beak of a nose, and the great yellow teeth looking out.

When Billy saw him his voice died away, and his mahogany colored face became a dirty yellow; and he stood and stared back at the little man with his lower jaw working up and down.

"Ah, Billy, Billy," says the little man without moving, "I'm sorry to see thee here, Billy."

Billy answered never a word, except to make a mumbling noise in his throat.

"But a warning's a warning, Billy," said the little man presently, "and you can never say I didn't warn you." He shook his head at Billy Blue, and did his level best to look mournful. " 'Mind,' I said, 'that you never get the island of Tranto under your lee,' I said. That's what I said, Thundering Billy, and here you are in spite of it. But enow. I swore a big oath to myself what I'd do to you if I got you here—and here you are. And now, ifackens, I'll do it! Come along Billy!"

With that he turned and began to trudge up the little hill, and Billy after him, like a man in a trance or one walking in his sleep. And the rest of us did nothing but stare open mouthed at the pair of them, unable to move or to shout.

When the two of them had got upon the top of the table-land so that their forms were black against the blueness of the sky, Billy seemed to come to himself. He stopped suddenly and braced himself, and his hand flew to the hilt of his cutlass. The little man stopped too, and facing round crooked his finger at Thundering Billy, as a sign for him to come along and not be delaying. But Billy was himself again, and in a raging temper, and his booming voice came down the hill to us like rumbling thunder.

"Burn you!" roars Billy, "where in thunder do you think you're taking me? Who the tow-row-row do you think you are?" he yells. "You tow-row-row little, crooked, fish eyed, turtle nosed, shag toothed, brass bound, squib faced son of a rusty rudder pintle you! Think I'm a blooming hulk do you to be towed around by you, you tow-row-row butt end of a tarry pigtail? I'll tear your heart out of your side and throw it in your face!"

Then he dragged out his tremendous cutlass with a swishing rasp and grabbed the hilt with both hands, and swung it up over his head. Backward he bent like a bow, and backward yet, to put all his strength into one terrific cut, until the cutlass pointed at the ground behind his back. Then he swung. I saw the light flash along the blade, and heard the "whoosh!" of it as it whistled through the air. Down it hurtled on the little man's pate.

Now I knew there was no guard, or dodging, or trick that could turn aside the cutlass of Billy Blue; and he had made just now the most terrific sweep of his life. I thought to see the little man fall in halves like an apple. But dear, dear, a fearsome thing happened then! The blade struck him full on the ridge of his head, and there was a sharp report like a pistol shot

and up flew a shower of sparks as if Billy had beaten white hot steel on an anvil, and the cutlass splintered in a thousand pieces. But the little man never even reeled; and in the moment of shocked silence that followed the stroke I heard his cackling, fleering laugh.

That fearsome and diabolical miracle was more than the eyes of Thundering Billy Blue could bear to see. He gave one piercing cry, and his black heart burst in his side. Down fell the hilt of the broken cutlass and rang upon the stones; then Billy took a lurching step to the side and put out his hands behind as if seeking for support. For a second he hung there, and the next crashed down to his back like a thunder riven tree.

Before he was fairly down the little man was squatting beside him, cackling most horrible, and gritting with his teeth, and twining his snaky fingers in Thundering Billy's beard. When he had got a good hold he gave a leap, and up he went, and up, and out toward the sea, head foremost like a rocket, and Billy flying out behind him like the tail to a kite. Described an arc, they did, like a round shot, and at last plunged into the sea, sending up a column of water which stood on end for a moment, and then collapsed in a smother of foam. Hissed the water did, when they struck it—hissed as when you thrust a red hot bar into it. And then the sea closed over them and frothed and boiled for a minute, and a faint patch of steam went floating off to loo-ard. And Thundering Billy Blue, the Buccaneer was gone.



And then the sea closed over them

With that, those of us who were watching screamed in sheer agony of terror, and took to our heels, and ran from that accursed spot like mad. What happened to the others I don't know; perhaps they plunged into the sea as I did and were drowned; perhaps their bleaching bones are on the island of this day. I can't tell. I remember nothing after that but being picked up far at sea, clinging to a timber of the *Golden Calf,* raving with a calenture and fever of the brain.

"And that was the manner," old Tooke would finish, looking about for something to rekindle his pipe, "that was the manner of the taking off of Thundering Billy Blue. And if I'm a pious man to-day, 'tis Davy Jones I have to thank for it."

The Wonder Hunt

By William B. Ashley

Illustrated by Frank J. Rigney

I REMEMBER very distinctly one very busy day in my boyhood. My father had gotten a notion through reading an article in some magazine that our home would no longer be home without an aquarium. He had sat up half the night filling paper with drawings to use as plans for making an aquarium. He nearly used me up the next day running me all over town for the materials. There was the glass, the framework to be cut and grooved, the putty, the paint, and I forget what else. My father was a splendid man but he never had had scout training in the use of tools. I think we made about three aquariums before the job stood up and held water. I was glad it was too dark to go out and get the rocks and ferns and fishes.



But eventually we did get all the things that go in an aquarium. Though he wasn't a good carpenter, my father was pretty well up on other things. He knew what kind of stones would build up into the prettiest cavelike effects. He knew how to pick out shells that would be worth noticing. He selected the right kind of water plants to excite attention and cause us children to ask questions. I think he put in a couple of little turtles, as well as several tiny fish, and we learned quite a little about the habits of such forms of life. The aquarium was almost as much fun as a dog, and a lot more instructive.

The idea is this, fellows. You know in a general lofty none-of-my-business sort of way that there is a whole raft of things out in your back yard that God Himself made and put life into and started going hundreds and thousands years ago. You know they are there in the form of all kinds of insects and plant life. You know they are there in the form of pebbles and stones which, of course, are not alive, but nevertheless were moved about a good deal and got into their present sizes and shapes through very wonderful processes of nature.

Or, if it is a rainy day, the chances are that up in your attic there are no end of curious things. If not in your attic, then in your chum's. Old truck that has been stuck away in corners for years. Mementos of the Civil War or even further back. Curios brought into the family from time to time, admired, displayed, and then put aside. Heirlooms of one kind or another, perhaps valueless excepting as heirlooms.



I still have a pair of daguerreotypes of my mother and father, which are remarkable examples of the first period of photography. Just the other day I gave away a worn-out razor, the handle almost entirely gone, that my great-grandfather shaved with. When I was a boy I almost blew my head off with a "horse pistol" my father had carried in the Civil War. And I have a number of very curious books of considerable age. I'll bet if you went nosing around and got the members of your family interested you could turn up in your own home some very interesting curiosities.

On a fine day when neither the back yard nor the attic has any attractiveness, you and three or four other fellows will hike to the woods for an outing and for a swim. You go tramping along with your hands in your pockets squeezing your lunch to a pulp under your arm, entirely indifferent to the fact that you are walking through a gallery of wonders that it has taken ages to create. You could not take back in a trek cart, because of the quantity, the specimens of stone and wood and leaf and root and shell and insect that you could gather in a few hours diligent wonder hunt.

Now Here Is the Big Idea

Now here is the big idea. All the other fellows in your town are just as dense about these matters as you are. So are all the grownups. Fact. Oh, of course, there are a few exceptions. But, generally speaking, the whole town forgets that it is built on and out of materials that had the mind of the Almighty in their construction.

Why not stir up your town a little? Why not form a local museum committee —whether you have a museum in your town or not—and do this:

1. Elect your scoutmaster spokesman and director.

2. If you have a museum, get the interest of its authorities in what you are going to do.

3. If you have no museum, get the interest of your library authorities or your school authorities, so that you may have space to display the results of what you are going to do.

4. Or possibly start this thing off at your scout headquarters. Or get the use of a small unoccupied building that you can transform into a local museum and have under your management, in company with responsible adults.

5. Make yourselves responsible for collecting for display to your public:

(a) Specimens of natural phenomena within the limits of your town. This will include a complete exhibit of the tree life, the plant life, the insect and bird life, water life, and inanimate objects such as shells and stones that are out of the ordinary, found within the borders of your town or neighborhood.

(b) All objects that can be found in the homes of your town or neighborhood, that tell the history of your town.

(c) Similarly all objects gathered in the same way that have other historic interest

or are interesting because of their unusual character.

(d) Objects that tell the story of the industries that are conducted in your town.

(e) Then, going beyond the limits of the town itself, do the same things in connection with what is known as the vicinity of your town, that is, the nearby fields and streams and woods and hills that are considered the natural resort of people of your own town for recreation.

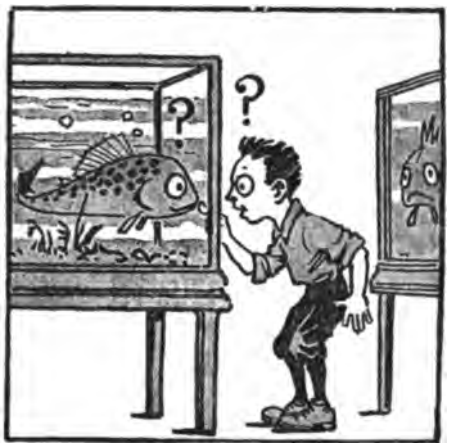
6. Under competent advice prepare descriptive labels for all these things. These labels will tell any one who looks at the object just what it is, where it was found, what its significance is, and if loaned, by whom.

7. Still under competent advice arrange for the display and public exhibition of what is collected.

One Thing at a Time

That sounds like a pretty big order. And it would be if you were expected to accomplish all this over night. The trick is to plan it out so that you do first things first in the order stated, and complete each step before proceeding to the next. This will take you some months, but will mean very little work at any one time, and the opening up of the display can begin as soon as you have a reasonable amount of material.

If you are working as aides to your local museum or your library or schools, the authorities will know how to handle what you find and will know how to assist you in going about your explorations. And



also they will know best how to let the public know about your activities.

As you could not expect to jump in and immediately dig up specimens, especially in the winter time, but must first plan the whole thing out, the best preparatory work right now after your plans are laid down, is the constructing of a number of cases or shelves to hold your specimens, and preparing receptacles in which to gather up specimens when you go on the wonder hunt.

This is a bully occupation either for the troop as a whole or for you fellows individually. You need not stop at cases either for little cabinets with drawers in them, racks for specimen jars, mounting boards for moths and butterflies and a host of other articles can be put together during the days and evenings when weather conditions frown upon collecting of any sort. There are several How-to-Make books that contain plans and drawings for these articles, among them several good ones written by our old friend Dan Beard.

The Mad Mullah's Mark

By Capt. A. P. Corcoran

Illustrated by Clyde Forsythe

AT Kismayu, on whatever subject you started the conversation, you could be sure of its swerving subsequently to just one:

"What was the latest news from over the border? Was it true the Mad Mullah showed signs of re-earning his name? How about this story of the Government's finding guns—up-to-date guns—with modern ammunition going on mysterious trips to goodness-knows-where?"

"I'm afraid I've brought you to a hot spot after all," a high official of the British Admiralty apologized to his guests, the Uganda Troop.

"The hotter, the happier," Captain Addinsel assured him, laughing.

The scouts smiled silently in corroboration.

They had been a week now in the capital of Jubaland. Their stunt on the sinking steamer had earned them the trip. Spreading up and down the coast, it had reached the ears of a personage, at whose residence Captain Addinsel was due for an official visit.

"Bring those venturesome young monkeys of yours with you," the personage had told him. "Perhaps we can give them some fun after their efforts."

But the "fun" threatened to be serious. Almost on their very first day had come the disturbing news of the gun-running under the Government's nose. And since then they had been feeding their imaginations on rumors of raids and risings to come.

That Mohammed Abdullah was not to be trifled with, they could see for themselves. Men who had at some time crossed the path of the well-named madman, were easily distinguishable on the town's streets. They swung along, legless, on crutches; or looked at you from lidless eyes; or grinned grotesquely and continually with teeth shorn of their protecting lips.

"The old scamp ought to be dead by this time." An official at dinner one evening was discussing the subject uppermost in all minds. "They say he's got Barashi —whatever that is, some sort of swelling all over his body."

"Doesn't seem to have reached his brain," put in another, "judging by the way he plans things. Those guns were for him—got his name on them. They were put in cotton bales. Some fool put too many in one bale, and they noticed it when 'twas being taken off the river boat. But who put them in those bales? Who brought them into the country?" He shook a bewildered head, and dinner being finished, they all rose.

The night was hot, with a high moon. The scouts scattered in the open along the veranda and through the heavy-scented trees. Jack Higgins and Meade, being restless, went farther afield, strolling out of the residential grounds. Away on their right was the little town, a cluster of dwel-

lings nestling under the shadow of the old Arab fort.

"Think I'll trickle along to the Mission house to see what's doing," said Meade. "Want to come?"

"No. I'm going for a walk. Rather stay outdoors," replied Higgins.

"Well, so long. I may follow you."

"Righto. I'm taking the river-road."

They parted, and Higgins turned north in the direction of the Juba river. For a while he walked past straggling houses, white-walled with corrugated iron roofs that gleamed livid in the moonlight. Under the eaves of one a Somali woman was stooped over a copper pot, stirring some concoction of brown syrup. He met Arabs and Indians, the former white-robed, the latter gayly-gowned, and children with henna-dyed eyes and hands.

But soon he had passed the motley crowd, and was beyond human habitation. Only the sing-song of Allah's praises followed him for a while, sung from the turret of the mosque. Now even that died down, and he could hear only the sea.

Kismayu stands in a land of sand and scrub, a small outpost on the edge of a half-wilderness. Just outside it the shore runs in a level stretch of beach overhung by a bank hollowed by the constant wash of water. Farther on, the land nearing the river becomes more fertile, and takes a curve or two at its outer edge. Some two miles from the town Jack Higgins came to a bend where the beach breaks jaggedly into a series of small bays. Trees cluster here, calabashes and acacias, with underbrush clinging thickly around their trunks.

He was walking carelessly, hands in pockets, head thrown well back the better to drink in the salt air. Coming near the shadow of the trees he stopped, pausing to wonder whether it was worth while to push through the black brush. He was not tired yet. He wanted to walk. Perhaps below on the beach would be better going. Incautiously he stepped to the bank's edge to look over. Being hollow below, it was unstable. It yielded to his foot's pressure. Before he could draw his hands out to save himself, he was catapulting some twenty feet down an incline, clawing futilely at sandy soil. Only some rocks at the bottom prevented his slipping into the sea. There was no beach here. The water washed right in.

He was cleaning the earth from his face preparatory to starting an upward climb, when to his ears came the sound of soft voices. They were on the left. Curious to see who besides himself chose this isolated spot in which to take the air, he crept up and along the bank.

A flicker of dim light! Funny! Still more cautiously he moved closer. Now he could see the bay. Creeping along the edge he lay full-length on the side of what seemed a small cliff that sloped to a precipitous edge. On the water he could now distinguish a dhow with furled sails. Two dark forms were moving on her deck. They were stooped over the hold, tugging at something heavy. It came. Now they dropped in the water, which was shallow, dragging the box with them. It was a small wooden box, but weighty. The two carrying it tottered as they neared land, a man with a candle in his hand moved from beneath the shadow of the cliff.

Higgins crept farther out, the better to see, but he had barely time to distinguish that they were Arabs when they vanished from view. He had caught, however, the gleam of sharp teeth and the flash of burnished knives in their belts. He was puzzling about their activities at this time of night, when they reappeared empty-handed. The shadow of this cliff was evidently a hiding place. His eyes followed them to the dhow, toward which

they waded again. Meantime two other men had brought a box ashore. His glance fell on it simultaneously with the candle light, and he started, straining his sight. For there was a sign now familiar to every scout.

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The mark of the Mad Mullah! This was the much-discussed gun-running on which he spied.

For some seconds he was too excited almost to think. Could he catch them? Impossible! He was weaponless and alone. There were seven men altogether, so far as he could see, on this job. Dozens of boxes were now being dragged out of the hold and brought in batches to the hiding place under the cliff. They at least could be seized, but the men! He must fetch help. He remembered Meade. Perhaps Jim would be coming to meet him. Softly he clambered up the bank, and started running toward Kismayu.

Never did two miles seem so endless. He came on Jim Meade just at the outskirts of the town, and into his ear he poured his tale, breathlessly.

"We ought to go tell the Captain," said Jim.

"But then we'd be too late to catch those fellows. They weren't wasting any time that I could see. There's just a chance that we can trap them, if we scout right out in the motor launch."

"Don't see how. But we'll go anyway. There ought to be some sort of weapons on board."

They ran to the beach, started the motor and were soon noisily skimming the sea.

"Here 't is," said Higgins presently, pointing out a clump of trees.

Shutting off the engine, they slipped into the shadow of the branches, gliding along to the outer edge of the little bay. It was egg-shaped, and they were at the narrower end. Holding on to the limb of a tree to steady the launch, they looked in.

The dhow was still close to the shore, but now her sail was unfurled.

"She's only waiting for a breeze," whispered Higgins.

"She's drifting out, as it is, with the tide," declared Jim. "It's on the ebb, you know."

He was right. She came out slowly. All the men seemed to be aboard. They were sitting around the hatch—just six of them. Higgins was wondering whether they had left a man ashore on guard, when two rose to go below as if in answer to a summons. Soon all were gone, save one who remained at the entrance of the hatchway, presumably keeping watch.

"Probably 'feeding their faces,' as Brad would say," commented Jim. "Good chance to catch them, if we can only think of something." He stopped. "She's only a couple of hundred yards away." He spoke of the dhow. "By George!" He jumped excitedly to his feet. "I think I've got it. Strip off," he ordered the astonished Higgins.

Wondering, Jack obeyed, following Meade's own example. When they were naked, the leader spoke up again.

"We'll swim quietly to the dhow. Here," he rummaged in a locker, producing a revolver, "you take this, though I don't think we'll need it. Wrap it in this piece of oilcloth to keep it dry, and tie it on top of your head. Just a tick now."

He ran below, and presently reappeared, carrying a foghorn and megaphone.

"What's the idea?" demanded Higgins.

"You'll see soon," replied Jim. "Ready? Good! Now swim as quietly as you can. Use the breast-stroke—it makes the least splash. Get around to starboard. I'll make for the port side. When I shout, hop on board, and cover any one who tries

to stop you with the revolver." While he spoke, he was fixing the megaphone on the end of the foghorn. "All right?"

"Yes."

They slipped softly into the sea. Scarcely breathing, they glided toward the dhow. As they drew near, they could see the dark brown skin of the Arab glistening in the light of the moon. Suddenly he stiffened to attention like an animal on the alert, and stood up. They stopped swimming. He walked to the dhow's side.

"Sink," breathed Jim.

Both scouts vanished below the surface, and stayed there until their lungs refused to be further deprived of air. When they reappeared, the Arab had walked back to the hatchway, and was standing there talking to the men below.

On the boys swam. Now they had reached the dhow. Making a motion to Higgins to continue toward starboard, Meade himself crept around to the port side, until he was abreast of the hatch.

The Arab on deck had slightly shifted his position. Now his back was half-turned toward Jim. Very gently the boy pushed the end of the megaphone over the gunwale. He opened the bellows of the foghorn to their fullest extent and shut them together again quickly.

And then on the soundless, still night there broke a blood-curdling moan.

With a scream the watcher aboard dove headlong down the hatch.

"Up!" yelled Jim.

Before the echo of the foghorn's voice had died, both boys were standing on the dhow. Now pointing the megaphone's end down the hatch, Jim let forth another blast that brought answering frightened yells from below.

"Give me that gun," he ordered Higgins. "With that and the hooter I'll keep 'em in the hold, while you swim over and bring back the boat."

Trudging now, Jack tore through the water to the launch, while Jim aboard the dhow kept the Arabs puzzled and petrified. Now a long-drawn sigh would resound in their ears. Now short snappy barks broke the silence around them. But as the chug-chug of a motor told of the launch's approach, a new fear possessed them. None but white men around Kismayu owned these oarless boats, and the white men were all government officials.

"Hook her up quick, Higgy, and get her going," Meade yelled to his assistant. "They don't seem quite so scared now of my humming bird." He had noticed curious faces peering out of the hold.

And even as he spoke, a black arm holding a burnished knife stretched up. It had almost touched him, so quietly had it come, when he swung around. The revolver was still in his hand. He swung it, striking the arm a resounding blow. Noiselessly the hand withdrew. Thereafter for the short journey, he never turned his eyes from the hold.

When they reached the dock, he still sat there, eyes glued to the hatch, hand holding the threatening gun muzzle.

"Run up and get help," he ordered Higgins. "It's safer. They're slippery customers; they might break away, if we let them out."

The personage high in the Admiralty, Captain Addinsel and some friends sitting on the veranda of their residence, were presently surprised to see a panting, gasping scout come running across the lawn.

"Down at the dock," he cried. "We've got them. Meade's holding them. Wants help."

"Who?" came the chorus.

"The gun-runners. Better hurry."

With Captain Addinsel at their head, the dignified assemblage was soon scampering down to the sea. En route they commandeered the presence of some police-

men. In their charge, the seven Arabs departed to a new jail.

"How did you do it?" The personage put the question to Meade and Higgins, when he had at length recovered from the shock of surprise.

"Oh! Just an accident, sir. Jack fell down a bank, when he was out walking."

The British official looked from one to the other.

"I wonder," he said, "if it would be possible for me to get assistants who could fall down a bank to such good purpose?"

Captain Addinsel laughed.

"'Fraid not," he said. "You see we poor paid officials have to be more careful of our trousers." He pointed to Higgins' which were still plentifully adorned with clay.

"I think I'll keep them as they are," said the personage, "as a souvenir of the Uganda Troop."

Ladybirds Do Their Shares

By Delphia Phillips

ENTOMOLOGISTS, or bug men, of the U. S. Department of Agriculture at Washington, joining forces with California horticulturists, investigated conditions in Australia, and found that this scale was attacked by certain natural enemies in that country that did not occur in California. This enemy was none other than our little friend the ladybird, or ladybug, as it is commonly called.

Hundreds of specimens of the ladybirds were collected, shipped to California, and turned loose in the orange and lemon groves. Within a remarkably short time, her ladyship was mistress of the situation. The scale grew gradually less, until it was no longer a factor to be reckoned with in any serious degree. The effect of the ladybird's good work was to open the eyes of the California fruit grower to the importance of predaceous insects in controlling the insect pests of his orchards.

The principal ladybird used in this work is the red, black-spotted variety, Hippodamia convergens. Millions of them are collected in their hibernating quarters during the winter, and held in cold storage until spring. They are then shipped to the Imperial Valley canteloupe growers for use against the various sorts of aphis that infest the vines. The aphis is the small green or brown louse found on almost all sorts of vegetation. One species of this insect frequently destroys hundreds of acres of canteloupes if allowed to remain undisturbed.

Going out to collect ladybirds in their winter quarters in the High Sierras is not without its dangers and thrills. Late in the fall the field men are sent up in the mountains to locate the ladybird colonies. These are usually found among the pine needles and other litter on sunny, well-drained slopes.

Obstacles in the way of high altitudes and exposure to cold, are frequently encountered, but the men who do this work are experienced mountaineers.



The mark of the Mad Mullah!

Halvers with the Bobcats

By James Ravenscroft

Illustrated by Enos B. Comstock

FOR an hour he had been swinging the dip net in the plunging water of one of the channels of the falls. Luck was bad. The net always came up empty.

He had stopped occasionally for a brief rest, leaning on the handle of the net. Now he dropped the handle and with a loud "whew!" sat down on a rock. He



The bobcat was venturing nearer

pushed his hat back and slowly mopped his brow with a dark-red bandanna that hung loosely around his neck.

"Fishin's supposed to be sport," he said, "but if pushin' this net against that current's not work my name's not Ben Kiffin. Strange a shad's not been along. Pap said the river ought to be swarmin' with 'em."

In a few minutes he got up and resumed dipping. He would drop the net in as far down the channel as he could reach, and then propel it against the current as far as he could reach. The place was naturally designed for dip-net fishing. That particular channel was flanked on the land side by a low, flat bank, and it was narrower than the others and had a more slanting pitch. Every spring shad came up from the sea, a hundred miles away, to spawn in the quiet waters that lay in wide, flat beds for a dozen miles between the low, easily ascended falls and the first of the round-topped hills that rolled up to the mountains in which the river had its source.

Ben swung away as steadily as if he had been rowing, and as he swept the channel he wove the net back and forth across the current to lessen the chance of a fish slipping by. His arms were beginning to tire when he felt the sudden wrench of a heavy weight. He braced the end of the handle against the inside of his knee and with a straight, quick heave tore the net from the water. A big shad struggled powerfully in its folds.

He bore the net to where the shad, when taken out, could not escape to the water by a sudden vigorous flop, and with the big blade of his pocketknife, a mighty bow-edged weapon, despatched it. He hooked his fingers into the shad's gill and held it up.

"Thought they'd be comin' along toward sundown, if they were comin' at all," he said. "I guess this one'll pull the old hand scales down to the four-pound notch, maybe further."

He laid the shad down and began dipping again. Luck improved, and in less than half an hour he had three more shad, two of them almost as big as his first catch.

"That's enough fish for one time," he allowed, and with an uneasy glance at the lowering sun, washed the blade of his knife, pulled a stout cord out of his pocket, slip-knotted one end in a notch cut in the middle of a short willow stick, and proceeded to string the fish. He wound the other end of the cord around his right hand until the longest shad's tail cleared the ground, picked up the net, and started off.

"I'll have to hit it up right lively to be home by dark," he remarked as he hurried into the low, bushy pines that stood along that side of the river.

The sun was just touching a thick forest sky line of dark green on the hills, and the soft, fragrant gloaming of the spring evening was beginning to suffuse duskily the distant and lesser outlines of the valley.

Ben had gone on the rather long fishing expedition late in the day because until three o'clock he had been busy helping his father with the corn planting. He was the youngest son, and the only son at home.

He had more than four miles to go, and nearly all the way through woods. A short distance from the river the low pines thinned and then vanished before a heavy forest of walnuts, hickories, cottonwoods, and other large trees. Among these the gloom of approaching night was gathering, and he walked faster; to be overtaken there by darkness would mean stumbling over fallen logs and limbs and struggling through vines and patches of briers and underbrush.

When he had gone about a mile, the net handle, which he was carrying lengthways at his side, caught in a bush, and as he

was going at top walking speed, before he could check himself the handle was twisted out of his hand. In stooping to recover it he turned partly around—and discovered that he was being followed.

It was a bulk of dull, yellowish color, shadowy and indistinct. He squinted at it a moment, and then took a few steps toward it, brandishing the net handle. It fled stealthily to one side and faded into the blur of the shadows of a thicket.

"Bobcat!" he said. "Can't resist the smell of fish."

Ben knew of the ways of bobcats. He understood that they rarely attacked any one, and did not feel much afraid. For several years there had not been many of them around the lower hills settlements, and they were not lurking nor troublesome.

The bobcat was a stranger to the falls region. Scarcity of food had driven it down from the big hills in search of new hunting grounds. It had spent that day beating along the river, searching where the water was shallow on slanting bottoms, and in backwater nooks, for fish, and for such animals as might be frequenting the banks. It had caught nothing; and as it had not eaten since the previous evening, it was beginning to feel ravenously in need of a meal.

Clawing its way up the soft, crumbly sides of a bank that was too steep for it to follow the water's edge, the bobcat reached the top just in time to catch a strong fish odor borne on a whiff of south wind. It raised itself to its full height and lifted its head and sniffed hungrily. The whiff of wind passed, and the smell with it. The bobcat sniffed at the four corners of creation, turning all the way round. Toward the river it sniffed long and deeply. From there, it knew, should come smells associated with fresh fish, but no such smell could its quivering nostrils detect. Then another whiff of wandering breeze floated past, and again came the strong fish odor. The bobcat lowered its head and started in a brisk trot, following its nose.

It soon overtook Ben. At first it hesitated. It knew something about mankind. It shook with an impulse to steal swiftly up and snatch a fish, but instinctive caution restrained it. Man was a dangerous animal to try tricks with. For a while it followed distantly; but the sight of the fish and the smell soon broke down its caution, and it was uncomfortably near when Ben discovered it.

Ben resumed his steady stride. A little further on he looked back. The bobcat was venturing nearer. He stopped, and it stopped and eyed him keenly. He dropped the net, changed the cord to his left hand, and set foot on a dry, brittle branch, snapped off a piece and hurled it at the beast. It did not run, as he had supposed it would, but only leaped aside with a vicious spit and flattened to the ground. Ben frowned, and got out his knife and opened the big blade. He picked up the net, taking the handle in the hand with the cord, and holding the knife in readiness in his right hand, went on still faster.

Every few steps he glanced over his shoulder. The bobcat was there. He suddenly wheeled around and yelled at it. It drew back a few steps and growled. A half a mile or more of such progress, and Ben felt that the bobcat was getting too bold, and faced it to threaten it back. As it crouched, snarling, its stubby tail twitching, its ears, which had flattened back, suddenly pointed forward, and he knew that it had been something ahead of them. He swung around and peered in the direction the ears had indicated.

He spied it, another bobcat, less than a hundred yards away. It had just emerged

into a patch of light coming through an opening in the treetops.

"This fish'll have all the bobcats in the valley here in a little while, I guess," he muttered, a little grimly.

This bobcat, also a hunger exile from the big hills, had come down toward the shank of the winter, and had been making its home in a rocky bluff near the falls. It had started to go up the wooded flat along the river, had caught the tantalizing smell of fresh fish, and, like the other, turned at once to locate it.

As it drew nearer Ben yelled and made a motion as if he were throwing something, but it only swerved to one side and continued to approach, its tail jerking and its fangs working like a house cat's when it sees a bird. He looked at the other bobcat; it, too, was drawing in.

A lumpy feeling came up in Ben's throat and his scalp tingled chillily, for no longer could he have any doubt as to the intention of the bobcats. They were going to have shad. That is, *one of them was going to have shad.* In spite of the danger creeping nearer and nearer, he unconsciously smiled at the thought. The unuttered words that took form in his mind were:

"Why, of course, I might a known they're not goin' to eat shad together like two friendly kittens. The best bobcat'll eat the shad. And when they're through settlin' which is the best bobcat—well, there won't be anything to hinder me from going' on home."

He looked quickly around. A few short paces to the left he descried a long, gnarled, wild grapevine trailing to the top of a tall, small-trunked pignut tree. He backed slowly to the vine. The bobcats came on a little faster. Had they been amiably-minded toward each other, and bent only on attacking him for a common purpose, he never would have got to the grapevine, of course; but, as he perceived, the issue between them had reached the point where all depended on their wary vigilance as they came together.

Ben took the knife in his teeth to free his hand so he could jerk the grapevine to test how stanchly it was caught at the top. It seemed to be strong enough to hold several times his weight. His plan was to toss the fish as far out as he could between the bobcats, and then go hand over hand up the vine, seat himself on a limb of the tree and wait until it was over. He dropped the net and drew back to throw the fish, but stopped.

The bobcats were now near enough for him to see them plainly in the half-light. They were gaunt and shabby looking, and it flashed into Ben's mind that perhaps only dire hunger could have driven them to challenge him for the fish, or to fight each other for them. He noticed, too, that the one which had followed him was getting old, as the rufflike fur around its face showed.

What he was on the verge of doing would precipitate a deadly battle. He knew how the catkind fights, and instantly his imagination pictured the whole ferocious spectacle; the flaming rage in the slits of eyes, the swift crash of horrible combat, and the muffled, choking spits and growls as fang and knifelike claw rent to tatters.

Ben shuddered. It would be a pity, he thought, to make the bobcats destroy each other because of their gnawing hunger. If he had not had the fish they would not have bothered him, he knew. They would have been careful to keep well out of his sight. They were only following their natural animal bent in trying to get the fish, just as he had followed his when he dipped the fish out of the falls channel. And as to the fish, they were carnivorous, too; and these particular fish were dead, anyhow.

Halvers with the Bobcats

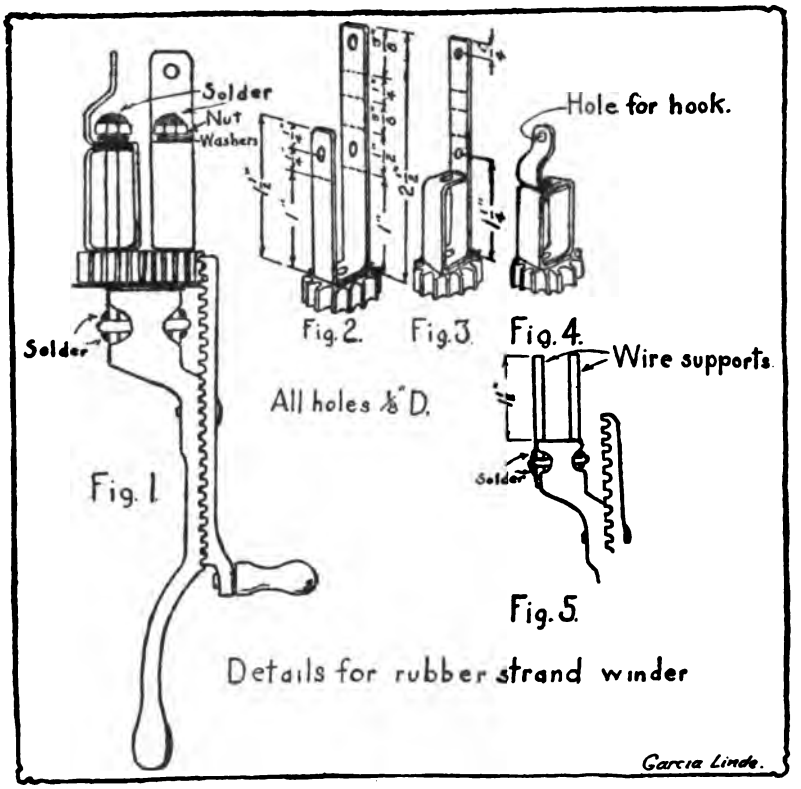
Yes, he decided, it would be a pity, and cruel.

"May be a ticklish risk I take," he said, addressing the bobcats, now very close, and crouching, "but I think it'll work. I'll just go halvers with you."

Ben took from the string the two fish nearest in size to the biggest, and at the same time tossed one to each of them. There was a sharp snarl of surprise, and they shrank back, but only for a second. With fierce growls they seized the fish, glared balefully at each other, and then went bounding off in different directions.

"Good thing I didn't stop when I caught that first big shad!" Ben yelled after them. "I guess you'd 'a' made me throw it out between you! As it is, you and me and the folks at home have all got a mess of shad!"

He picked up the remaining fish and the net and went on, whistling loudly.



For article—See opposite page

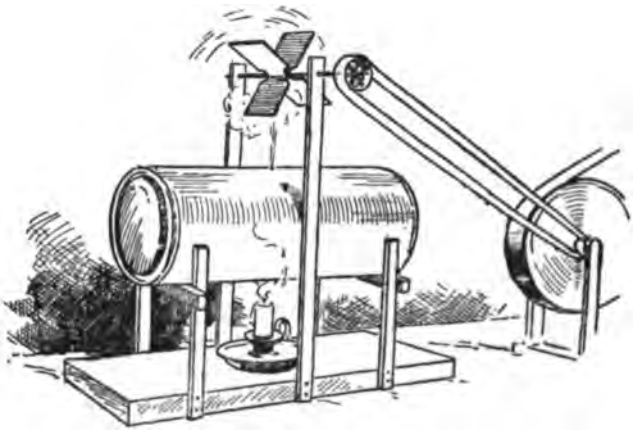
What Boys Can Make

How to Make a Steam Engine

By Paul Kay Pinkerton, Age 11

GET a can three inches in diameter and eight inches long. It must have a tight cover, such as a syrup tin, and there should be a tiny hole in the side of the can half way up.

Next get a board ten inches long, five inches wide and one inch thick. Draw a line across the end. The can is to rest over these two lines. Two inches from one end on each side, fasten a stick five inches high and one-half inch square. Measure an inch down from the top of each of the four sticks. Across the end sticks at this point, fasten a stick six inches long and one-half inch square. The can is to rest on this frame. At the sides of the middle of the board fasten two sticks ten inches high and one-half inch square. One inch from the top and one-fourth inch from the edges on the outsides of these two sticks, make a dot. Through the dot bore a small hole for an axle. Get a Meccano rod or any heavy wire about that size and it will do for an axle. Whittle a thin paddle out of the wood. The wings of it should not be more than one and one-half inches long. Put the paddle on the axle and put the axle through the holes in the sticks.



Put a little water in the can, then lay it on the frame so that the tiny hole is on top. Have a candle or a kerosene or alcohol burner under the can to heat the water. Place the paddle over the hole in the can so that when the steam comes out of the hole it will make the paddle go round. If you have a pulley wheel you can put it on one end of the axle and connect it up with something.

How to Make a Rubber Strand Winder

By Garcia J. Linde, Age 16

A neat and effective device to wind the rubber strands of a racing model aëroplane can be made easily and at a small cost.

The materials required are, 1 Dover Egg Beater, 2 washers ⅛" inside diameter, and 2 brass nuts also ⅛" inside diameter. The best size egg beater is the one having a ratio of about 5 to 1, and which costs about 30 cents.

First pull the wire supports to see if they

are securely fastened at the base. If they are not, a drop of solder will remedy this. (See Fig. 1.)

Clip the wire supports at the top and take off the beaters. Then cut the wire supports leaving 1½". (See Fig. 5.)

Take one of the beaters and measure off 1½" on one side and 2½" on the other side. Cut the beater to these lengths by holding at the marks with a pair of pliers and bending the extra length back and forth until it breaks. The ends may be filed smooth. Do the same with the other beater.

In the shorter sides drill ⅛" holes ¼" from the ends. In the longer sides two ⅛" holes are drilled, one being ¼" from the end, and the other 1¼" from the end.

Then mark the sides as follows:

On the shorter sides mark off ½" from end. The longer sides are then marked off into the following sections; 1" from the bottom, then ½", then ⅜" then ¼" and ⅜" will be left. Leaving the 1" section straight bend the rest at a right angle, the half inch section overlapping the half inch piece on the shorter side and with the holes in both pieces coinciding. The ⅜" piece or section is then bent up at right angles, the ¼" section is bent down towards the center at a slight angle, and the remaining ⅜" section is bent straight up. (See Fig. 4 for exact shape.)

These reconstructed beaters are now slipped over the supports and into their original positions. The washers, then the nuts are slipped over the supports. A drop of solder is placed on top of the nuts, thus securing them to the supports. I have found that "Solderall," a prepared solder, is the best solder and easiest to work with on such small work as this.

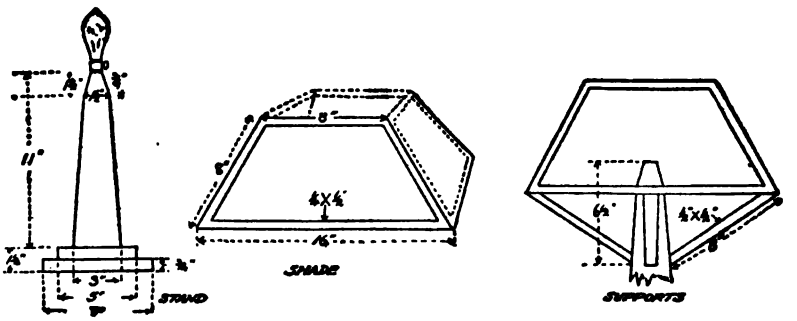
This winder may also be used to twist wire, by passing a piece through one of the holes and doubling together and holding the ends fast, then winding the wire until it breaks loose at the winder.

This winder may be used on a single propellered model as well as a double propellered one. The washers and nuts used in this winder may be purchased at any model supply house.

How to Make a Library Table Lamp or Electrolier

J. Wayne Moore, Jr., Age 13

First secure 2 pieces of wood, one 5"×5"×¾", and the other 7"×7"×¾". Sandpaper these and drill a ½" hole in the center of each. On the larger cut a groove from the center to one side, for the cord. Then join them together by nailing or glueing, getting the small one exactly in the center of the large one. The large one should extend 1" on each side. The groove on the larger should, of course, be on the bottom. This is the base.



Next get a piece of wood 3″×3″×11″. Bring this to the shape of a pyramid by planing ¾″ off of each side of the top. Now draw a line on each side, 1½″ from the top. Plane from this point up towards the top until it comes to a point ¾″ square. Drill a ½″ hole through the center of this, drilling first at one end and then at the other, until they meet in the middle. Fasten this to the base, leaving 1″ of the base all around it (see Fig. 1).

Get a socket, about 7′ of drop cord, a plug, and a piece of pipe about 6″ long, threaded to fit the lower part of the socket. This is to make it steady. Run the cord through the hole in the stand and connect the top to the terminals of the socket. The cord should also go through the pipe which should be screwed to the socket. The slack cord should now be pulled out of the hole and tacked in the groove cut for it. The plug is now attached to the drop cord. This completes the stand of our lamp and now we will build the shade.

Cut 4 pieces of wood ¼″×½″×12″, and 12 pieces ½″×¼″×8″. To get the angles right, lay 4 of the pieces together. Cut these and put glue on the joints and nail together. We now have one side of our frame. Make 4 of these. Join them together, nailing the right side of each one to the left side of the one next to it. This makes the left side of each one ¼″ wider than the right side. Now cut 4 pieces of paper a little larger than the open place, so that it will fit to the inner side and not push through. Fasten these down by nailing small strips behind them. After this is done we have to join the shade to the stand. We do this with 4 pieces of wood 8″×¾″×¾″ nailed to the stand 6½″ from the top. The ends are cut so as to make a kind of square. The shade is nailed to this.

Now get some stain—mahogany or oak—and stain the stand, and the wooden part of the shade.

Wonderful Wrecking Machinery

NO fire department responds more quickly to an alarm than do wrecking crews stationed along our great coast lines. Let a call for assistance be flashed from any ship in distress and the wrecking crews will be found ready to rush to its assistance. It is not generally known that the most powerful and complete wrecking machine in the world stands ready waiting to lend assistance along the American coast. The most complete outfit is naturally stationed at New York where the greatest fleet of merchant ships congregate. The wrecking fleet comprises fast boats and great floating derricks with an immense amount of ingenious apparatus for salving ships of every kind. The crews which stand ready day and night to lend assistance have been trained by years of experience in many seas. The fees for such work, by the way are very large and a bill of hundreds of thousands of dollars is often collected for floating a great ship and bringing her safely into port.

A Practical Problem

By Tudor Jenks

Illustrated by Enos B. Comstock

MY chum, Jim Rathburn, was a first-rate out-of-doors youngster. He ranked high as a Boy Scout, and when he was decked out with all his badges and insignia, he looked like a highly decorated, pocket-edition, foreign Field Marshal.



"Do you see that?"

But though all this proved he had plenty of brains and good sense, when it came to mathematics in school—Jim was worse than a tenderfoot! He couldn't seem to get the hang of it. He said "there was no sense in it. It wasn't practical." And that was the trouble. He always came to his lessons in mathematics — and especially in geometry—in a decided state of grouch. He had lost his temper with the propositions, the axioms, the corollaries, and never gave them a fair chance. The result was that he was a thorn in the side of Professor Griffin—who taught us geometry, and who seemed very fond of it. Jim would sit in the class with a bored expression, or an indulgent smile that got on the Professor's nerves. And when Jim was called up to recite he had a weary air and acted as if he was indulging the Professor in some sort of weak-minded fad — as if the whole business of drawing diagrams

on the board, and proving that "if AC is equal to AB by hypothesis, and if CD is extended to the point D," and so on, was the merest drivel, and certainly far beneath the attention of the clever and brilliant Jim Rathburn.

Well, as all boys will know well enough this sort of thing made for trouble. Geometry isn't, at best, a very cheerful study, and so there was a great deal of whispering, and small practical jokes, and various mischief in Professor Griffin's class room, which made that branch of study something of a failure in our school.

Now—all this was changed in a single day.

It was the custom in the school, as the milder season of the year came on, to take the boys out on hikes in the mountains. The declared object was to study geology. But, whether interested in geology or not, everybody was eager to go on the expeditions for it was the best of fun for the crowd to get into the open air, to take a good bracing walk along the mountain trails, to see the views, and to spend a night outdoors—which last improvement, now that there were so many Boy Scouts among the pupils, had become a regular custom of recent years.

The members of the faculty—even including "Old Griffy," Professor Griffin, who was older than most of them—were included in the hike; and it was a great pleasure to the boys to show their teachers that, while, in the class rooms, their teachers could tell them much the boys didn't know, outdoors, in the open, the teachers had a great deal to learn from the skilled Boy Scouts. The scouts, in short, really took charge of the expedition—choosing the camping grounds, putting up the tents or shelters, building the fires, cooking appetizing dishes for their elders, and gaining their applause for skillful feats in various contests.

In all these things Jim Rathburn was in his own element. He was a natural leader among the boys, and was deservedly popular with us all, for he was neither bully nor braggart, was kind and good-natured, and generally square and helpful. He certainly knew his business as a Boy Scout, and was eager to help other boys forward in the scale of promotions.

Just how it happened I don't know—and Jim Rathburn couldn't precisely explain it. But on this especial outing, Jim fell short of his usual fine record. He got lost. And, what made this worse, was the fact that he not only lost himself, but he also lost Professor Griffin. When he told the crowd about it, some of the boys burst out laughing at first—thinking that the getting lost was a fake; and that Jim had meant only to give Old Griffy a little scare by keeping him away from the camp over night.

But the end of the story proved this couldn't be, for the honor and the glory of the happening went to the Professor—as Jim handsomely acknowledged. I don't



He always came to his lessons in mathematics in a decided state of grouch

think it altogether strange that Jim and the Professor should get lost, for there is something very puzzling about our mountain trails. I'm not bad on the trail, and I've been lost at least once, and mightily puzzled many more times than that. Toward nightfall they certainly do become most puzzling—especially if one travels by landmarks. If you happen to diverge a little to the right when you should go to the left, you may be led into an entirely new bit of ground, find yourself on the edge of a cliff, and be forced to retrace your steps toward the top; or you may wander to the wrong side of a ridge and be coming down further and further away from the home path. Night or fog makes this worse.

Anyway, whatever the cause, just before twilight Jim took Professor Griffin up a little peak to show him a queer cave in the rocks. The camp was by the bank of the White River, a good sized stream, which flows down at the foot of the lower hills that rise abruptly not far from its bank. And when the two started to come back, they must have taken some wrong turn; for they lost the trail, and then, unaware they were off their course, hurried to get home (that is, to the camp) in time for supper.

Jim was the one who hurried, telling the Professor, "Just over the next rise we'll come to a little brook, and that runs down to the river close by the camp; so all we have to do is to follow it downstream for a quarter of a mile or so, and we'll be all right."

But when they got over "the next rise," there was no stream visible. So Jim suggested that probably they'd better ascend the *next* hill to see if that was the one he meant. And it wasn't; so, to make a long story short, they were plainly and decidedly lost, and within an hour or two it would be night. This wouldn't have been so bad, but that it began to shower, and of course they didn't enjoy being without shelter, for the nights were still quite cold.

So Jim, with the good sense that is in him, said, "Professor, I'm sorry to say that I don't know where we are. I've lost you—and myself; and as a Boy Scout I'm ashamed of myself."

Whereupon the Professor sat down on a fallen log under an oak tree, and with a good-natured grin responded:

"Well, Rathburn, don't blame yourself too much. It's probably my fault as much as yours, for I've been talking so much that probably I took your attention from your work."

"What shall we do?" Jim asked. "I've got my ax and some matches, and I can easily make a fire, and put up a shelter."

"But aren't you hungry?" asked the professor. "For I am. I could eat a boiled crow."

"Yes—so could I," Jim admitted. "But I haven't the faintest idea which way to go. This drizzle has covered the stars; and I don't see that either stars or my compass would help us much either. You see, we want to know on what side of these mountain ridges we are—for I can't tell exactly where the camp lies."

"In short," said the Professor, thoughtfully, "we've got a nice little practical problem to solve, haven't we? I wonder if geometry won't help us out?"

"If it will," was Jim's laughing reply, "I'll undertake to be its friend for life. I'll get 90 per cent in it—you see if I don't!"

"Well, let me think it over a bit," was the Professor's reply. "I've got a notion."

After a little reflection, the Professor turned to Jim saying, "Have you a piece of paper and a pencil?"

"No," said Jim, "I'm afraid not."

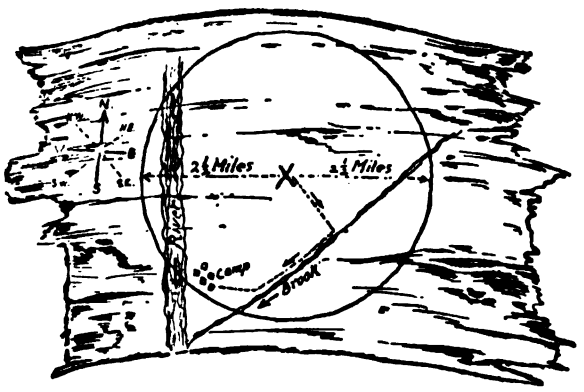
"No matter," said the Professor, "cut me a bit of stick, with a sharp point, and

I'll draw a diagram here in this patch of sand."

"I can do better than that," Jim suggested. "I'll get you a nice piece of birch bark; and have you got a fountain pen? I've seen you use one in class."

When the bark was ready, the Professor smoothed it out and drew upon it with his fountain pen a circle and some lines that looked like a geometrical problem.

"Now," said Professor Griffin in his teacher voice; "when you're lost, the first thing to ask yourself is this: 'How *far* am I from where I want to go?' That is, in our case, 'How far are we from the camp?'



I should say, fully three miles. What do you think?"

"I can come nearer than that," said Jim, glad he could be of use. "I always know about how fast I walk, and I am sure we're not over two miles and a quarter—and we're nearer the river—which is all we need to find."

"Very well," was the Professor's answer, "to make sure we'll say 2½ miles. So take the center of the circle—where we're supposed to be" (here he marked a letter X in the center) "and then a line from us to the circle will be approximately 2½ miles. Consequently, the camp lies somewhere in that circle, if it was drawn on a map. Do you see that?"

"Yes," said Jim, "that's sure as shooting."

"Now the next thing is to determine what part of the circle it is most likely to be in. So we ask ourselves the second question: 'What direction, in a general way, does the river run?' "

"I can fix that pretty well," Jim answered. "The White River runs southward. So the brook runs very nearly southwest. I am sure of that, and it's nearer to us than the river."

"Fine!" said the Professor, as he drew a line touching the circle and making it go southwest by the aid of Jim's compass. "Now there is only one more question we must ask. 'When we left the part of the path we *knew,* did we turn right or left?' Can you answer that?"

"Let me do some thinking," answered the Boy Scout, and assumed an attentive attitude quite as thoughtful as the Professor's had been. At length he looked up, with a gleam of triumph in his eye.

"I am *pretty* sure that we turned to the left," he said, "and I believe we should have turned to the right. I remember now that we began to go uphill—instead of down. If we had turned to the *right,* we would have gone down hill. And I think it was because I saw a big squirrel in a tree, and went nearer to the tree and that took me uphill. You can say we turned to the left."

"Then we are all right," said the Professor, and he completed his diagram, having to use Jim's flash light because it was growing dark.

"Now," he said, "we're here in this circle, at X, the center. Somewhere in the circle is the camp, or the brook that leads to the camp. If we examined the whole country within the circle we're *sure* to find the brook. But we don't need to do that, for if we walked around the outer rim of the circle we'd come to the brook.

"But the brook runs nearly southwesterly. So I have drawn a line touching the circle, and in a southwesterly direction. Then the brook runs parallel to that line. Do you follow me?"

"Yes," said Jim after he had looked at the diagram. "So somewhere in the circle the brook must run southwesterly, or parallel to that line. I see that."



They discovered that the brook was nearer than they had expected

"And so, if we travel northwesterly and southeasterly we'll hit the brook, either in one direction or the other," said the Professor, "provided we go about two and a half miles."

"But if we turned to the *left,* and should have turned to the right, why the brook is somewhere to our *right,*" Jim exclaimed. "So we must go southeasterly."

"Good!" said the Professor. "You'd get 100 per cent for that answer, if we were in class. You're perfectly right. So all we have to do is to travel something less than 2½ miles in a generally southeasterly course—and if there is any truth in geometry, we'll get home to a late supper!"

"Well, the sooner we start, the better," said Jim, rising.

"But let's allow for any error," answered the Professor cautiously. "When you're lost, you ought to leave a clue for anybody who may be looking for you. Cut me a bit of stick."

When the stick was ready, the Professor wrote on the birchbark:

> "Rathburn and Griffin were here about 6 P.M. We are going Southeast from here looking for the brook, the river and the camp."

This placard he put in a slit in the top of the stick and left it stuck in the ground where any searcher would be likely to see it.

Then they started out, using Jim's flash light, and taking

A Practical Problem

bearings on big trees or rocks so as to keep a true southeasterly course.

It was rather hard going, but, as usually happens when one is lost, they discovered that the brook was even nearer than they had expected; and they discovered it by hearing its flowing in less than an hour.

The rest was easy. They followed the brook downstream, and after a rather marshy walk suddenly saw the light of the camp fires through the woods. Then they walked into the little group of tents, arriving even in time for the last of the pancakes, and some choice bits of bacon.

"Where have you been?" I asked them, as they came into the firelight.

"Why, Jim took me up into the hills to see the cave," said Old Griff, "and we stayed longer than we meant to."

"Yes," said Jim Rathburn, "that is exactly true—but it isn't the whole truth. Professor Griffin is drawing it very mild. Rathburn, the First Class Scout, lost himself and his Professor in the woods—and might have been there yet if——"

"Never mind, Jim," the Professor interrupted.

"But I do mind," Jim insisted, "for the Professor used some good practical geometry—and rescued us. I'll tell you about it later, but a few cakes, some syrup, and a slip of bacon would go to the right spot with us both. Am I right, Professor?"

"You are right—Q. E. D.," the Professor agreed, and they went to supper.

Later we heard all about it, and the Professor confessed that the method he used was not his own invention. Jim and I went to see him one evening, and he told us that his brother, Sydney Griffin, had been an explorer, and that years before he had lost his life in Australia, "leaving me," said the Professor, "to care for his family, which is one thing that has kept me busy over geometry, algebra, and a lot of dry subjects out of which I have to make a living. But I find them interesting, too.

"Well, among my brother's books was one, by Francis Galton, called the 'Art of Travel.' I found it mighty good reading as you will too. And out of that book I got my plan for finding our way when we were lost.

But if I hadn't been interested in the geometry of the method, I doubt whether I should have recalled it."

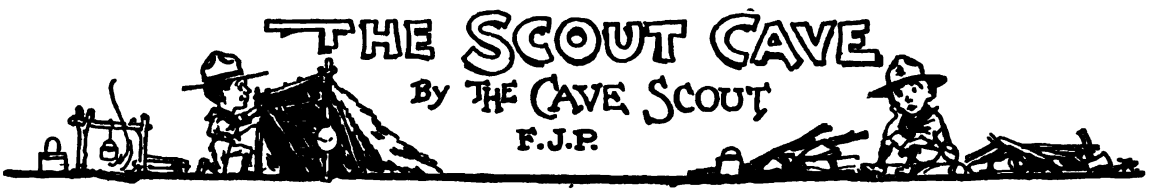
That is what changed Jim Rathburn's attitude toward "Old Griff" and also toward mathematics. And he took a prize in geometry the very next term. A strange result of getting lost in the woods!

Plugging Along

By Berton Braley

When we started in our scouting,
Tenderfoots as green as grass,
We were slow and we were stupid,
But to-day we head the class.
We were mixed on all our signals,
We were lost in every wood.
But we've learned a whole lot better,
Now we think we're pretty good.

But we mustn't get conceited,
For our wise old Master Scout
Says we have so little knowledge,
He's afraid to let us out.
Still, he tells us, we're improving,
Tho' our woodcraft is a crime,
If we keep forever trying,
We may have some sense in time.



"MR. CAVE SCOUT."

Yes?

"Who is your favorite American?"

Well, that's a good question. I was just thinking we ought to talk about Americanism in our confab and that's as good a way to get at it as any.

You know at the Tenth Annual meeting, when the leaders in Scouting came together in New York City from every section of the country for a two day council of Scouting, the Cave Scout noticed that the word most often used was "Americanism." And you know, fellows, they seemed to take it for granted that every Boy Scout is thoroughly Americanized. That was the main reason why they were so anxious to extend the Scout Movement. They said to each other, "If we can make every boy in America a scout this problem of Americanization will be just about solved."

"But Cave Scout, who *is* your favorite American?"

Well, let's see, what *is* an American. Or let's put it this way, what kind of a fellow is a genuine American. Come on boys, get in the game!

"Well, Cave Scout, a real American is *brave*. He isn't afraid of any kind of a proposition and if he believes it is *right* he'll tackle it no matter what the odds may be against him. He doesn't go around with a chip on his shoulder looking for trouble, but he won't give in to a bully and when he sees there is no other way, he'll fight like a wild cat. And he never knows when he's licked. Remember in the war we've just had how the Germans said the Yanks didn't know how to fight? They said soldiers were not supposed to capture machine guns by assault. But when the doughboys once got their fighting blood up they went after those machine gun nests through shells and shrapnel, hail of bullets, gas and liquid fire and wiped 'em up with automatics, bombs and bayonets!"

"AND say, Cave Scout, an American wants things fixed so there is a square deal and a fair chance for everybody. He doesn't want nor expect any special favors in the game of life. He has confidence enough in his own ability to win success without any extra boosts that cost him nothing. And if some other fellow attains greater success than he does he will be a good sport and say, 'Bully for you, old man! Congratulations!' "

"A real American, old Cave Man, has a tender, generous heart. The sorrows and suffering of others appeal strongly to his sympathy. He will do anything in his power to relieve distress—serve and sacrifice and give."

Fine! Say this is bully! The Cave Scout is having a vacation while you fellows do all the talking! Next!

"Well, I think a real American believes that this country is the best country on earth. He is proud to be a citizen of it and shows his appreciation by doing whatever duties may come his way."

"I agree with the last speaker, Mr. Cave

Scout, but it seems to me a real American goes farther than that. He believes his country to be the best on earth, but he believes, also, that no country is perfect and that it is his duty to discover in what ways America can be improved and then to work like sixty to have those improvements made."

"Yes, it's all right to *say* this is the best country on earth, but a *real American* should be able to tell *why* that is true."

"All right, then, I'll tell you. Because America has always led the world in all forms of progress—has set the standard in government, invention, production of wealth, standards of living."

"Oh, so you think you're a real——"

COME on now, fellows, if you can't get along without arguing I'll have to do the talking myself.

"Mr. Cave Scout, a real American is no whiner. When hard knocks come along he takes them in good humor, profits by his experience, grits his teeth and goes at things again, determined to overcome his difficulties and win out in the end."

"Yes and a real American is a fellow you can bank on. His word means something. When he says he'll do a certain thing you can trust him to do it."

Well, we've taken a look at this real American now from all sides and we haven't flushed him yet. Maybe now——

"But Cave Scout, you haven't answered my question yet. *Who* is your favorite American?"

Say, there's no chance of your losing a trail, is there, old timer! Well, to tell the truth I haven't any *favorite* American, because I don't know of any one man who combines a greater number of the qualities we have been discussing than any other. But how does this strike you: take all the qualities of Americanism that Washington possessed, add to them the qualities of Lincoln and finally those of Roosevelt and you'll come pretty close to an ideal American, don't you think?

While you fellows were describing Americans did any of you notice how closely you were following the Scout Law? Just think back for a minute—brave, kind, helpful, loyal, cheerful, trustworthy —Scout qualities—American qualities.

Come to think of it, it couldn't help being so, could it? For our scout ideals are founded on the qualities of those rugged old pioneers who carved America out of a wilderness, and these same old sturdy, resourceful frontiersmen contributed to America the qualities that have made our country unique among the nations. All Europe, indeed all the world, has come to look upon Americans as fine, strong, rugged, honest, upstanding men. It is for us to help maintain this standard.

Say, those men at the National Council Meeting were on the right track when they said that Scouting work was Americanization work. No doubt about it!



What's a Boy Scout?



A Glimpse of the Life of the Boy Who "Belongs"

A SCOUT! He enjoys a hike through the woods more than he does a walk over the city's streets. He can tell north or south or east or west by the "signs." He can tie a knot that will hold, he can climb a tree which seems impossible to others, he can swim a river, he can pitch a tent, he can mend a tear in his trousers, he can tell you which fruits and seeds are poisonous and which are not, he can sight nut-bearing trees from a distance; if living near ocean or lake he can reef a sail or take his trick at the wheel, and if near any body of water at all he can pull an oar or use paddles and sculls; in the woods he knows the names of birds and animals; in the water he tells you the different varieties of fish.

A Scout walks through the woods with silent tread. No dry twigs snap under his feet and no loose stones turn over and throw him off his balance. His eyes are keen and he sees many things that others do not see. He sees tracks and signs which reveal to him the nature and habits of the creatures that made them. He knows how to stalk birds and animals and study them in their natural haunts. He sees much, but is little seen.

A Scout, like an old frontiersman, does not shout his wisdom from the housetops. He possesses the quiet power that comes from knowledge. He speaks softly and answers questions modestly. He knows a braggart but he does not challenge him, allowing the boaster to expose his ignorance by his own loose-wagging tongue.

A Scout holds his honor to be his most precious possession, and he would die rather than have it stained. He knows what is his duty and all obligations imposed by duty he fulfills of his own free will. His sense of honor is his only taskmaster, and his honor he guards as jealously as did the knights of old. In this manner a Scout wins the confidence and respect of all people.

A Scout can kindle a fire in the forest on the wettest day and he seldom uses more than one match. When no matches can be had he can still have a fire, for he knows the secret of the rubbing sticks used by the Indians, and he knows how to start a blaze with only his knife blade and a piece of flint. He knows, also, the danger of forest fires, and he kindles a blaze that will not spread. The fire once started, what a meal he can prepare out there in



In Camp

the open! Just watch him and compare his appetite with that of a boy who lounges at a lunch counter in a crowded city. He knows the unwritten rules of the campfire and he contributes his share to the pleasures of the council. He also knows when to sit silent before the ruddy embers and give his mind free play.

A Scout practices self-control, for he knows that men who master problems in the world must first master themselves. He keeps a close guard on his temper and never makes a silly spectacle of himself by losing his head. He keeps a close guard on his tongue, for he knows that loud speech is often a cloak to ignorance, that swearing is a sign of weakness and that untruthfulness shatters the confidence of others. He keeps a close guard on his appetite and eats moderately of food which will make him strong; he never uses alcoholic liquors because he does not wish to poison his body; he desires a clear, active brain, so he avoids tobacco.

A Scout never flinches in the face of danger, for he knows that at such a time every faculty must be alert to preserve his safety and that of others. He knows what to do in case of fire, or panic, or shipwreck; he trains his mind to direct and his body to act. In all emergencies he sets an example of resourcefulness, coolness and courage, and considers the safety of others before that of himself. He is especially considerate of the helpless and weak.

A Scout can make himself known to a brother Scout wherever he may be by a method which only Scouts can know. He has brothers in every city in the land and in every country in the world. Wherever he goes he can give his signs and be assured of a friendly welcome. He can talk with a brother Scout without making a sound or he can make known his message by imitating the click of a telegraph key.



THE SCOUT OATH

On my honor I will do my best:
1. To do my duty to God and my country, and to obey the Scout Law;
2. To help other people at all times;
3. To keep myself physically strong, mentally awake, and morally straight.

THE SCOUT LAW

1. A SCOUT IS TRUSTWORTHY.
A Scout's honor is to be trusted. If he were to violate his honor by telling a lie, or by cheating, or by not doing exactly a given task, when trusted on his honor, he may be directed to hand over his Scout badge.

2. A SCOUT IS LOYAL.
He is loyal to all to whom loyalty is due: his Scout leader, his home, and parents and country.

3. A SCOUT IS HELPFUL.
He must be prepared at any time to save life, help injured persons, and share the home duties. He must *do at least one good turn to somebody every day.*

4. A SCOUT IS FRIENDLY.
He is a friend to all and a brother to every other Scout.

5. A SCOUT IS COURTEOUS.
He is polite to all, especially to women, children, old people, and the weak and helpless. *He must not take pay for being helpful or courteous.*

6. A SCOUT IS KIND.
He is a friend to animals. He will not kill nor hunt any living creature needlessly, but will strive to save and protect all harmless life.

7. A SCOUT IS OBEDIENT.
He obeys his parents, scout master, patrol leader, and all other duly constituted authorities.

8. A SCOUT IS CHEERFUL.
He smiles whenever he can. His obedience to orders is prompt and cheery. He never shirks nor grumbles at hardships.

9. A SCOUT IS THRIFTY.
He does not wantonly destroy property. He works faithfully, wastes nothing, and makes the best use of his opportunities. He saves his money so that he may pay his own way, be generous to those in need, and helpful to worthy objects. *He may work for pay but must not receive tips for courtesies or good turns.*

10. A SCOUT IS BRAVE.
He has the courage to face danger in spite of fear and has to stand up for the right against the coaxings of friends or the jeers or threats of enemies, and defeat does not down him.

11. A SCOUT IS CLEAN.
He keeps clean in body and thought, stands for clean speech, clean sport, clean habits, and travels with a clean crowd.

12. A SCOUT IS REVERENT.
He is reverent toward God. He is faithful in his religious duties and respects the conviction of others in matters of custom and religion.



The Daily Good Turn

A Scout is kind to everything that lives. He knows that horses, dogs and cats have their rights and he respects them. A Scout prides himself upon doing "good turns," and no day in his life is complete unless he has been of aid to some person.

A Scout does not run away or call for help when an accident occurs. If a person is cut he knows how to stop the flow of blood and gently and carefully bind up the wound. If a person is burned his knowledge tells him how to alleviate the suffering. If any one is dragged from the water unconscious, a Scout at once sets to work to restore respiration and circulation. He knows that not a minute can be lost.

A Scout knows that people expect more of him than they do of other boys and he governs his conduct so that no word of reproach can truthfully be brought against the great brotherhood to which he has pledged his loyalty. He seeks always to make the word "Scout" worthy of the respect of people whose opinions have value. He wears his uniform worthily.

A Scout knows his city as well as he knows the trails in the forest. He can guide a stranger wherever he desires to go, and this knowledge of short-cuts saves him many needless steps. He knows where the police stations are located, where the fire-alarm boxes are placed, where the nearest doctor lives, where the hospitals are, and which is the quickest way to reach them. He knows the names of the city officials and the nature of their duties. A Scout is proud of his city and freely offers his services when he can help.

A Scout is a patriot and is always ready to serve his country at a minute's notice. He loves Old Glory and knows the proper forms of offering it respect. He never permits its folds to touch the ground. He knows how his country is governed and who are the men in high authority. He desires a strong body, an alert mind and an unconquerable spirit, so that he may serve his country in any need. He patterns his life after those of great Americans who have had a high sense of duty and who have served the nation well.

A Scout chooses as his motto "Be Prepared," and he seeks to prepare himself for anything—to rescue a companion, to ford a stream, to gather firewood, to help strangers, to distinguish right from wrong, to serve his fellowmen, his country and his God—always to "Be Prepared."

How to Become a Boy Scout

HOW can I join the Scouts? Hundreds of boys ask this question every day.

If you want to become a Scout, the first thing for you to do is to find out whether or not there is a troop organized in your town or city. If there is, you should call on the Scoutmaster of the troop and apply for admission. The Scoutmaster would then tell you just what you would have to do to become a member.

If you live in a large city where there is a Scout Commissioner or Scout Execu-

tive—and nearly every large city has one —it would be better for you to apply to him. He will tell you which troop it would be best for you to join—or possibly he will help you organize a troop of your own.

But if there is no Scout organization in your town your problem is entirely different, for you must have a troop organized. The first thing to do is to get a copy of the official "Handbook for Boys." You may be able to buy one at your local bookstore, but if not you can get one from National Headquarters, 200 Fifth Avenue, New York, N. Y., for 50 cents. Read this book carefully.

Next you must talk with your boy friends and get them interested. When you have enough boys to form a patrol—at least eight boys—you are ready to organize.

Your next problem is to get a Scoutmaster. He must be a man over twenty-one years of age whose good character will be vouched for by others. If you have not already found one who is willing to take charge, you must find one, for you cannot become Scouts until you have a man at the head of your troop. Try all your fathers and brothers and see if one of them will not consent to help you out. If none of them will do this, pick out some other man you know, and try to get him interested. Send his name to the National Headquarters and ask them to write to him. In the meantime, show your man that you mean business. *And don't quit!* If you try long enough you will get one.

Probably your troop will be connected with some school or church or other institution. If so, your scoutmaster will see the head man of the institution and explain to him that a troop committee must be appointed. This committee will be composed of three or more men appointed by the proper authorities of the institution, i. e., Board of Trustees, Directors, Executive Committee, etc. If the troop is not connected with any institution the committee should be composed of prominent men who represent the best elements in the community. These men may be selected by the scoutmaster or they may constitute themselves a committee, for purposes of organization, subject to approval of National Headquarters. The Scoutmaster or the troop committee will apply to Headquarters for Scoutmasters' and Assistant Scoutmasters' application blanks, as well as registration blanks. These will be approved by members of the Troop Committee, who will agree to provide a new leader if it should become necessary to appoint one.

The scoutmaster will ask you and the other boys to sign applications for admission to the troop and these applications will be endorsed by your parents. He will send in your fees, which are 25 cents a year for each scout, and your names will be officially enrolled with those of the tens of thousands of other boys who are members of the great organization. You will then receive an official certificate and be entitled to wear the official badges and uniform and will be in a position to begin your progress in scouting and advance through the various degrees. Possibly you will become an Eagle Scout, and thus reach the highest rank in the organization.



Respect for Country


THE END

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